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West Lynch Timber Sale

Final Environmental Analysis

April 2002

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ENVIRONMENTAL ANALYSIS

FOR THE

WEST LYNCH TIMBER SALE

PREPARED BY

James Kibler, Management Forester

Montana Department of Natural Resources and Conservation

Northwestern Lands Office,
Kalispell/Plains Unit

April 2002

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CHECKLIST ENVIRONMENTAL ASSESSMENT

Project Name: **West Lynch Creek Timber Sale**
Proposed Implementation Date: June 2002
Proponent: Department Of Natural Resources and Conservation, Northwestern Lands Office, Kalispell/Plains Unit.

Type and Purpose of Action: The Department of Natural Resources and Conservation Proposes to sell 21,396 tons of timber in the Lynch Creek Drainage. This action would produce revenue for the Public Building (P. B.) Trust Grant. Activities proposed would maintain and improve forest health, reduce fuel loadings, and increase forest productivity beneficial to future Trust actions. No reasonable alternatives were identified or proposed during project scoping, therefore only forest product removal and sale are analyzed in this EA checklist.

This proposal contains two alternatives for consideration: an Action and a No Action alternative. The Action Alternative proposes eight harvest units totaling 687 acres. An estimated 21,396 tons of timber would be harvested. New road construction and other development cost would be required to implement the Action Alternative. Income to the Trust from this project is estimated at $500,000.00. Under the No Action alternative no activity would be undertaken. Conditions that now exist would progressively move to latter successional characteristics. Dominant shade intolerant tree species would be replaced by shade tolerant species. Insect and disease infestations would be expected to increase as well as increase in fire hazard. Unauthorized use would continue at current rates. No revenue would be gained from the sale of timber.

Lands involved in this proposed project are held by the State of Montana in trust for the support of the specific beneficiary institutions such as the public buildings trust, public schools, state colleges and universities, and other specific State institutions such as the School for the Deaf and Blind (Enabling Act of February 22, 1889; 1972 Montana Constitution, Article 1 Section 11). The board of Land Commissioners and the Department of Natural Resources and Conservation are required by law to administer these trust lands to produce the largest measure of reasonable and legitimate return over the long run for these beneficiary institutions (Section 77-1-202, MCA). On May 30, 1996, The Department of Natural Resources and Conservation (DNRC) released the Record of Decision for the State Forest Land Management Plan (SFLMP). The Land Board approved the SFLMP 's implementation on June 17, 1996. The SFLMP outlines the management philosophy of the DNRC in the management of state forested lands, as well as sets out the specific Resource Management Standards for ten resource categories.

The DNRC will manage the lands involved in this project according to the approved philosophy and standards in the SFLMP, which states:

> "Our premise is that the best way to produce long-term income for the trust is to manage intensively for the health and biologically diverse forests. Our understanding is that a diverse forest is a stable forest that will produce the most reliable and highest long-term revenue stream. In the foreseeable future, timber management will continue to be our primary source of revenue and our primary tool for achieving biodiversity objectives."

Location: **Section 14 & 23 Township 21N, Range 26W**
County: **Sanders**

I. PROJECT DEVELOPMENT

1. **PUBLIC INVOLVEMENT, AGENCIES, GROUPS OR INDIVIDUALS CONTACTED: Provide a brief chronology of the scoping and ongoing involvement for this project.**	Public involvement has been solicited through newspaper advertisements plus letters sent to adjacent landowners and other known interested parties and organizations. Public response was received and used to assist in defining issues surrounding the proposed project. Management issues were identified by DNRC specialist and field foresters. Concerns identified for the project area included increases in water yield, fine sediment delivery, soil displacement and potential for erosion, habitat conditions for wildlife, economic feasibility, road construction, trespass, the effects of logging, and the effects of no action. Issues and concerns have been resolved or mitigated through project design or would be included as specific contractual requirements of the project (see Attachment 2, Resource Analysis; Attachment 3, Stand Prescriptions; Attachment 4, Project Plan; Attachment 5, Mitigation Measures; Attachment 6, Consultants and References).
2. **OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION, LIST OF PERMITS NEEDED:**	Approval by Montana Fish, Wildlife, and Parks for a Stream Preservation Act Permit 124.
3. **ALTERNATIVES CONSIDERED:**	**No Action**: This alternative would not produce revenue for the Public Building (P.B.) Trust Grant. Increased losses due to insect and disease activities could be expected. Fuel loadings available for wildland fires would be expected to increase putting at risk the existing timber stands in these sections and adjacent properties. Wildlife security would continue to erode from motor vehicle access. Snag densities will be reduced from legal and illegal firewood cutting. **Action:** The Action Alternative would harvest 21,396 tons (3.29 MMBF) from 687 acres, generating approximately $500,000 of income to the Public Buildings Trust Grant. Additionally, the Action Alternative proposes to construct 4.28 miles of new road, upgrade 4.74 miles of road, obliterate 0.5 miles of road, and permanently close 4.15 miles of road (see Attachment 4, Objectives and Specifications).

II. IMPACTS ON THE PHYSICAL ENVIRONMENT

RESOURCE	[Y/N] POTENTIAL IMPACTS AND MITIGATION MEASURES N = Not present or No Impact will occur. Y = Impacts may occur (explain below)
4. **GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE:** Are fragile, compactable or unstable soils present? Are there unusual geologic features? Are there special reclamation considerations? Are cumulative impacts likely to occur as a result of this proposed action?	[Y] One existing open native surface open road is eroding and is in a poor location. Measures to minimize impacts as recommended by a DNRC specialist have been included in the project design (See Attachment 2, Hydrology Analysis; Attachment 6, Mitigation Measures). Through the project design, several segments of preexisting road will be obliterated or closed to improve the stability of soils now present on the area.
5. **WATER QUALITY, QUANTITY AND DISTRIBUTION:** Are important surface or groundwater resources present? Is there potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality? Are cumulative impacts likely to occur as a result of this proposed action?	[Y] The project area, transportation system, and harvest plan have been reviewed by a DNRC hydrologist. Recommendations to minimize impacts have been incorporated into the project design (See Attachment 2, Hydrology Analysis; Attachment 5, Mitigation Measures).
6. **AIR QUALITY:** Will pollutants or particulate be produced? Will the project be influenced by air quality regulations or zones (Class I air shed)? Are cumulative impacts likely to occur as a result of this proposed action?	[Y] The project area is located in Montana State Air shed 2; it is not within a Class I Air shed. Some particulate matter will be introduced into the Air shed from the burning of logging slash. All burning will be conducted during times of adequate ventilation within the existing rules and regulations.
7. **VEGETATION COVER, QUANTITY AND QUALITY:** Will vegetative communities be permanently altered? Are any rare plants or cover types present? Are cumulative impacts likely to occur as a result of this proposed action?	[Y] Tree removal will create temporary but not permanent changes in the vegetative structure of the project area. Silvicultural prescriptions have been developed to move stands toward more historical conditions. The Action Alternative affects no old growth stands. A vegetation analysis has been completed and no adverse effects to cover types have been indicated (See Attachment 2, Vegetation Analysis). No sensitive plants listed by the Montana Natural Heritage Program have been identified in the project area.

RESOURCE	[Y/N] POTENTIAL IMPACTS AND MITIGATION MEASURES
8. **TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS:** Is there substantial use of the area by important wildlife, birds or fish? Are cumulative impacts likely to occur as a result of this proposed action?	[Y] The West Lynch sale area is in big game habitat. The proposed activities are designed to limit impacts to wildlife habitat with special emphasis directed toward big game. Unit marking and treatments would retain some visual screening in the project area Road management is expected to increase security. Treatments will also help improve available forage for big game. By avoiding activities in the Streamside Management Zones, corridors will remain in place and provide dense cover for wildlife species (see Attachment 2, Wildlife Analysis) Lynch Creek has been identified as having a possible population of West slope Cutthroat Trout The cumulative watershed effects boundary incorporates the Lynch Creek drainage. Due to unit prescription design and location it is unlikely that any effects for the proposed activities would be detectable down stream of section 14. Detailed watershed analysis is included in Attachment 2, Hydrology Analysis.
9. **UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES:** Are any federally listed threatened or endangered species or identified habitat present? Any wetlands? Sensitive Species or Species of special concern? Are cumulative impacts likely to occur as a result of this proposed action?	[N] Direct use by Threatened and Endangered species has not been indicated in the wildlife biologist reports. No adverse cumulative impacts to sensitive species were identified. (See Attachment 2, Wildlife Analysis). Lynch Creek has been identified as a westslope cutthroat trout stream (See attachment 2, Hydrology Analysis). Harvest activities would not occur within Streamside Management Zones. Use of temporary bridge to cross Lynch Creek and the use of Best Management Practices during the project implementation would mitigate impacts.
10. **HISTORICAL AND ARCHAEOLOGICAL SITES:** Are any historical, archaeological or pale ontological resources present?	[N] This project has been reviewed by DRNC archeologist. Significant sites or artifacts were not identified during these reviews.
11. **AESTHETICS**: Is the project on a prominent topographic feature? Will it be visible from populated or scenic areas? Will there be excessive noise or light? Are cumulative impacts likely to occur as a result of this proposed action?	[Y] Portions of the project area will be visible from the Cedar Creek, Upper Lynch Creek Roads, and residences on Hideway Lane and the county road Treatments on Units 2 and 3 are along the old county road. Unit 1, Unit 5, Unit 6, and Unit 7 are adjacent to private property. Visible impacts will be noticeable in the short term, but are not likely to have a cumulative impact.
12. **DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY:** Will the project use resources that are limited in the area? Are there other activities nearby that will affect the project? Are cumulative impacts likely to occur as a result of this proposed action?	[N]
13. **OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA:** Are there other studies, plans or projects on this tract? Are cumulative impacts likely to occur as a result of other private, state or federal current actions w/n the analysis area, or from future proposed state actions that are under MEPA review (scoping) or permitting review by any state agency w/n the analysis area?	[N] No other projects have been identified at this time.

III. IMPACTS ON THE HUMAN POPULATION

RESOURCE	[Y/N] POTENTIAL IMPACTS AND MITIGATION MEASURES
14. **HUMAN HEALTH AND SAFETY:** Will this project add to health and safety risks in the area?	[Y] Risks will increase along public roads adjacent to harvest units for a short period. Cumulative impacts are not likely to occur.
15. **INDUSTRIAL, COMMERCIAL AND AGRICULTURAL ACTIVITIES AND PRODUCTION**: Will the project add to or alter these activities?	[Y] Timber harvest will provide continuing industrial production in the Plains area Improvements to big game habitat should provide increased recreational opportunities.
16. **QUANTITY AND DISTRIBUTION OF EMPLOYMENT:** Will the project create, move or eliminate jobs? If so estimated number. Are cumulative impacts likely to occur as a result of this proposed action?	[N] People are currently employed in the wood products industry in the region. Due to the relatively small size of the timber sale program, there will be no measurable cumulative impact from this proposed action on employment
17. **LOCAL AND STATE TAX BASE AND TAX REVENUES:** Will the project create or eliminate tax revenue? Are cumulative impacts likely to occur as a result of this proposed action?	[N]
18. **DEMAND FOR GOVERNMENT SERVICES:** Will substantial traffic be added to existing roads? Will other services (fire protection, police, schools, etc) be needed? Are cumulative impacts likely to occur as a result of this proposed action?	[Y] Log trucks hauling to the purchasing mill will result in temporary increases in traffic on the Lynch Creek Roads, and Montana Highway 200. This increase is a normal contributor to the activities of the local community and industrial base and cannot be considered a new or increased source. Cumulative impacts are not likely to occur

19. **LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS:** Are there State, County, City, USFS, BLM, Tribal, etc. zoning or management plans in effect?	[Y] In June 1996, DNRC began a phased-in implementation of the State Forest Land Management Plan (The Plan) The management direction provided in the Plan comprises the framework within which specific project planning and activities take place. The Plan philosophy and appropriate Resource Management Standards have been incorporated into the design of the proposed action.
20. **ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES:** Are wilderness or recreational areas nearby or accessed through this tract? Is there recreational potential within the tract? Are cumulative impacts likely to occur as a result of this proposed action?	[Y] Some increases in recreational use is expected following the project. Cumulative impacts from this increase would be reduced by limiting access.
21. **DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING:** Will the project add to the population and require additional housing? Are cumulative impacts likely to occur as a result of this proposed action?	[N]
22. **SOCIAL STRUCTURES AND MORES:** Is some disruption of native or traditional lifestyles or communities' possible?	[N]
23. **CULTURAL UNIQUENESS AND DIVERSITY:** Will the action cause a shift in some unique quality of the area?	[N]
24. **OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:** Is there a potential for other future uses for easement area other than for timber management? Is future use hypothetical? What is the estimated return to the trust Are cumulative impacts likely to occur as a result of this proposed action?	[Y] Costs, revenues and estimates of return are estimates intended for relative comparison of alternatives. They are not intended to be used as absolute estimates of return. The estimated stumpage is based on comparable sales analysis. This method compares recent sales to find a market value for stumpage. These sale have similar species, quality, average diameter, product mix, terrain, date of sale, distance from mills, road building and logging systems, terms of sale, or anything that could affect a buyers willingness to pay for stumpage. The project would harvest approximately 3.2 millon board feet of timber returning approximately $500,000.00 to the Public Building (P. B.) Trust Grant.

EA Checklist Prepared By: James B Kibler, Management Forester, Northwest Land Office, Kalispell, Plains Unit , DNRC, November 30, 2001

Signature: James B Kibler **Date:** 4-5-2002

IV. FINDING

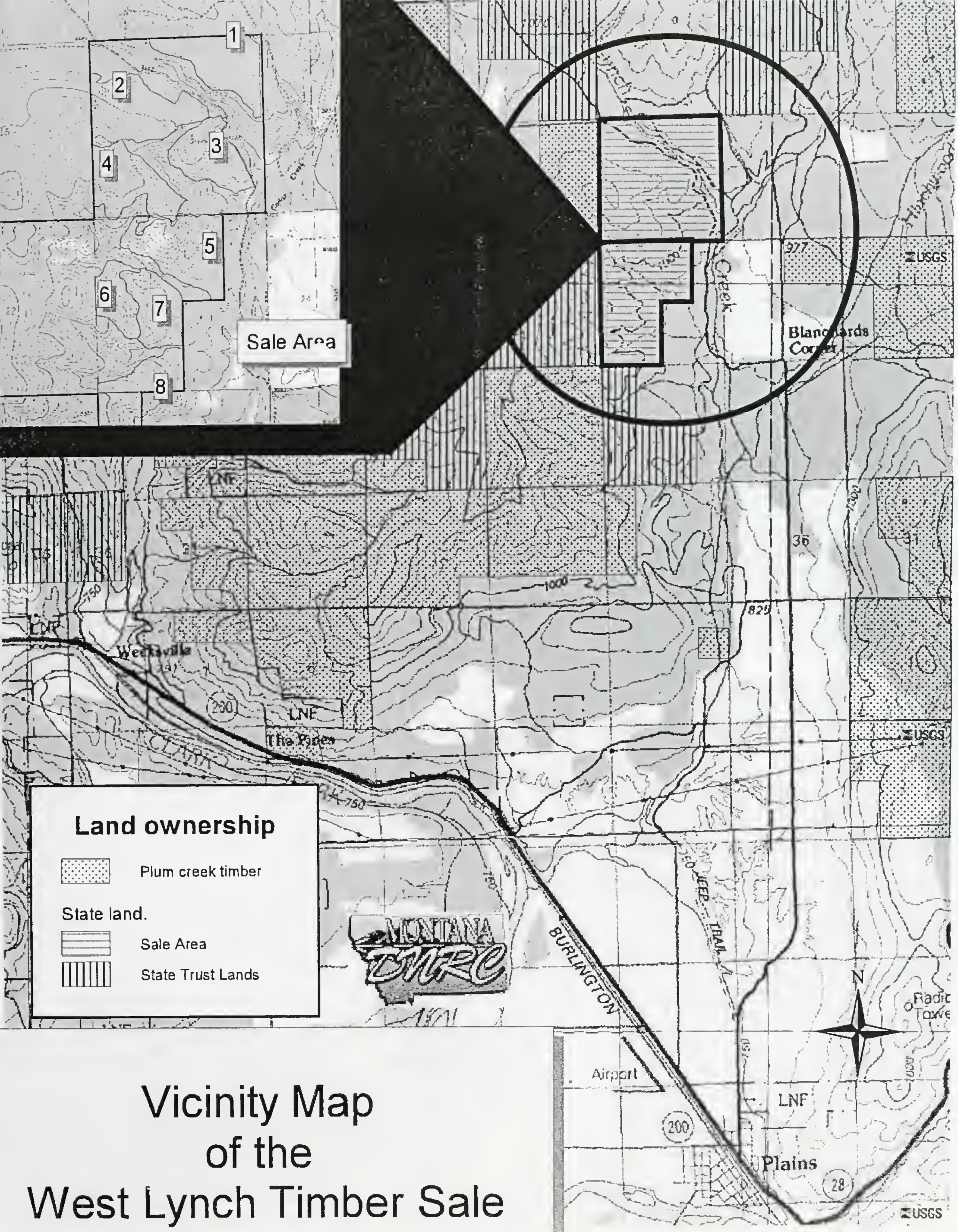
25. ALTERNATIVE SELECTED:	Following due consideration, I find the Action Alternative as proposed by the Project Leader meets the stated project objectives. It complies with all pertinent environmental laws, the DNRC State Forest Land Management Plan, and a consensus of professional opinion on limits of acceptable environmental impact. The No Action Alternative does not meet or address project objectives of generating revenue for the Trust, fuel and hazard reduction, and in providing improvements to forest health. For these reasons, I have selected the Action Alternative for implementation on this project.
26. SIGNIFICANCE OF POTENTIAL IMPACTS:	After thorough review of the Project File and all scoping documents, I find that all identified resource management concerns have been fully addressed in this environmental assessment. The Action Alternative generates income to the Trust now, as well as ensuring future returns through measures designed to provide long-term productivity on this site. It does not eliminate other as yet unidentified revenue generating opportunities on this site. I find that there will be no significant impacts to the human environment as a result of implementing the Action Alternative.

27. Need for Further Environmental Analysis: [ ] EIS [ ] More Detailed EA [X] No Further Analysis

EA Checklist Approved By: Larry Ballantyne (Name) Plains Forest Management Supervisor (Title)

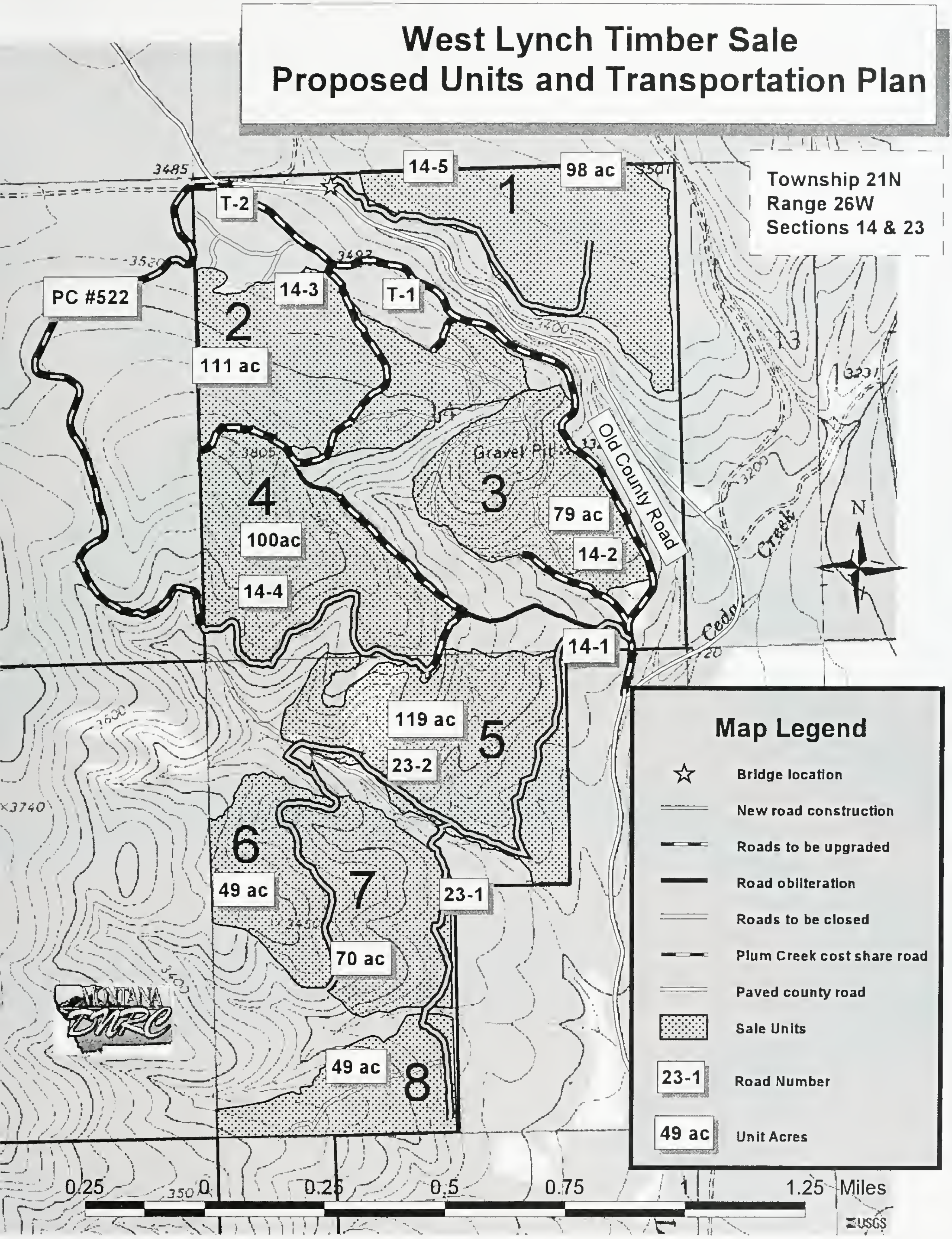
Larry Ballantyne (Signature) 4-5-2002 (Date)

Attachment 1:
Area Maps



Vicinity Map of the West Lynch Timber Sale

West Lynch Timber Sale Proposed Units and Transportation Plan



Attachment 2: Resource Analysis

VEGETATION ANALYSIS
FOR THE
WEST LYNCH TIMBER SALE

Introduction/ Analysis Methods

The Plains Office typically prepares two to four timber sales per year. Each proposed project is evaluated for its potential effects on lands managed by the DNRC and the surrounding landscape. Methods used in the analysis-included review of stand level inventory (SLI) data, field visits, review of scientific literature, aerial photography, and consultation with other professionals. An analysis of past, and existing conditions, are compared to determine what future conditions might be expected. Past and current events have changed the forest conditions on the land parcel involved in the proposed project area. The area is characterized by stand replacing fire events in the late 1800's and early 1900's. Since the late 1800's, fire has virtually been excluded from the area. Logging activity in the Lynch Creek drainage started around 1928. Products produced from logging included fuel wood, mining timbers and railroad ties. Stand data indicates that any material removed from sections 14 and 23 would have been from remnants left from earlier fires or fuel wood. Section records indicate these sections had Christmas tree sales in them in the 1950's. A railroad grade still exists in section 14 that was constructed in the 1930's that was used for logging activities in the upper parts of the Lynch Creek drainage. Steam Donkeys were used to do much of the work. The rail bed was located next to Lynch Creek because at the time by placing it close to the creek it allowed easy access to both fuel and water. Around the mid 1960's Sanders county constructed the paved road along Lynch Creek that exists today, utilizing much of the previous railroad grade.

Analysis Area

In developing the proposed project, analysis was done on two levels. The first level comprises lands managed on the Plains Unit by the State of Montana, Department of Natural Resources and Conservation. This level is shown in Tables 1, 2, and 3 in this analysis. The second area comprises lands adjacent to Sections 14 and 23 in Township 21 North, Range 26 West in Sanders County, Montana. This area is shown on the Lynch Creek Timber Sale Vicinity map.

Existing Condition

Vegetation conditions that currently exist at the Plains Unit level are evaluated by cover types described in Losensky's "Historical Vegetation of Montana" (1997). Stand level inventories are compared to the cover types that historically would be expected on areas managed by the DNRC (see Table 1, Table 3, Table 4, and the West Lynch Stand Map). Current cover types are the result of stand replacing fires in the late 1800's and early 1900's. The literature indicates that, prior to this time, many of these cover types were influenced by periodic low intensity under burns. This would suggest that the stands were historically open and dominated by seral shade intolerant tree species. The average cycle of these under burns was 20 to 30 years. It is believed that conditions from at least the 1500's till about 1850 were considerably cooler and wetter than subsequent times helping to create conditions similar to the effects from fire suppression and predisposing these and other stands to stand replacement severity burns. In the period around 1900 weather conditions and the influence of expanding settlement contributed to the events that helped create the large fires that occurred during this period. Since that time an aggressive attempt to exclude fire from the area has greatly influenced

the current vegetation. The result is that many of the cover types on the unit are stands that are less than 150 years old. These stands are converting from shade intolerant seral forest to shade tolerant climax forest. These stands are also showing increased available fuels due to fire exclusion.

The second area of analysis looks at the vegetative conditions of timber stands in sections 14 and 23, and the lands surrounding those sections (see the Lynch Creek Timber Sale Vicinity, and West Lynch Stand maps). The stands in the proposed project are characterized as even aged forests emerging from a stand replacing fire (see Table 3). The stands range from 90 to 165 years old. One stand was identified as old growth as described by Green et al. (1996). This stand was not included in the proposed project design, and will not be affected by the proposed action. The stands have variable basal areas and stand structures that reflect a change from shade intolerant seral structures to shade tolerant species. Currently the stands are showing increased mortality from insects and diseases and competition from shade tolerant species. The stands are also showing increases in forest fuel loadings and increases in ladder fuels from tolerant species regeneration in the under-story. The properties adjacent to these sections are small private, industrial private, or owned by the state. In sections 11, 13, 23, 24, 25, and 26 land uses include traditional agricultural uses and residences. Sections 15 and 27 are owned by Plum Creek Timber and managed for commercial timber uses. Parts of sections 10, 12, 26 and all of section 22 are lands managed by the DNRC. The privately held lands adjacent to the project areas have had recent logging activities within the last 5-10 years. Fuel loadings on private lands surrounding the project area are lower than those on State land. Snags are being removed on State land due to firewood cutting along open roads. There are noxious weed populations scattered throughout the proposed project area small openings and along roads right–of–ways. The primary causes of noxious weed spread are grazing range cattle and unauthorized vehicle use.

Direct and Indirect Effects

No Action Alternative

Conditions that now exist will remain the same in a No Action Alternative. Insect and disease related mortality is expected to increase. Snags will continue to be utilized by the public. Noxious weed populations are not expected to increase.

Action Alternative

The proposed action alternative would harvest timber from approximately 675 acres. Eighty one acres in stand 7 would be converted from a WL/DF cover type in the 100-150 year age class to a PP cover type in the 0-39 year age class, and 17 acres in stand 6 would be converted from a WL/DF cover type in the 40-99 year age class to a PP cover type in the 0-39 year age class (see Table 2). The remaining 577 acres would have no change in the age class or cover type, but harvesting would leave a residual basal area of 60 ft^2/acre of trees in the 10" – 12" diameter class. Since trees affected or susceptible to insects and disease would be removed, the average health of remaining trees would be improved. On all Units snags greater than 14 inches DBH would be retained. Unauthorized removal of snags would be reduced by the road management measures shown in the project plan. Because forest fuel loadings would be reduced by logging system design, post harvest thinning, and spot excavator piling and burning, the fuel loading across the harvest area would be 5 -10 tons per acre of material larger than 3 inches diameter, and small groupings of regeneration greater than 15 feet in height and free of insects and disease. Fuel loadings would be further reduced and crown spacing increased for a 100-foot strip adjacent to private property. Under-story and brush screening would remain along open roads where available. Noxious weeds may increase in canopy openings. Spot treatment with chemicals would be used to manage small weed outbreaks. Closed roads and skid trails would be fertilized and seeded to help reduce invasion from noxious weeds.

Cumulative Effects

No Action Alternative

In the No Action Alternative stand structure and species composition on State lands across the Plains Unit are expected to continue the change towards shade tolerant species. Fuel loadings and values at risk are expected to increase, relative to the lands adjacent to sections 14 and 23.

Action Alternative

Across the Plains Unit, 81 acres would be converted from a WL/DF cover type in the 100-150 year age class to a PP cover type in the 0-39 year age class, and 17 acres would be converted from a WL/DF cover type in the 40-99 year age class to a PP cover type in the 0-39 year age class. The resulting acreages of each cover type and age class are shown in Table 2.

Within the second area of analysis (timber stands in sections 14 and 23, and the lands surrounding those sections) fuel loading and ladder fuels would be reduced to a level similar to the fuel loading on adjacent private property. Tree spacing, insect and disease incidence, and weed occurrence would be at similar levels to adjacent property (see West Lynch Timber Sale Vicinity map).

TABLE 1
PLAINS UNIT CURRENT COVER CLASS ACREAGE

Current Type	**Stand age class**				
	0 – 39	**40 - 99**	**100 - 149**	**150+**	**Total**
	Acres				
ALP	0	206.6	326.0	160.2	692.8
DF	0	829.9	775.1	484.8	2,089.8
HW	0	0	110.9	0	110.9
LP	601.0	2,253.2	687.2	37.3	3,578.7
MC	124.1	2,601.6	4,337.6	1520.6	8,583.9
NONSTKD	393.8	0	0	0	393.8
PP	509.3	9,122.3	11,517.8	6,752.4	27,901.8
WL/DF	548.5	2,652.0	3927.6	2,009.3	9,039.4
WWP	103.3	44.5	95.6	63.4	306.8
TOTAL	**2280.0**	**17,710.1**	**21,777.8**	**11,028.0**	**52,795.9**

Updated 10/16/2001

TABLE 2
POST HARVEST COVER TYPES FOR PLAINS UNIT

Current Type	**Stand age class**				
	0 – 39	**40 - 99**	**100 - 149**	**150+**	**Total**
	Acres				
ALP	0	206.6	326.0	160.2	692.8
DF	0	829.9	775.1	484.8	2,089.8
HW	0	0	110.9	0	110.9
LP	601.0	2,253.2	687.2	37.3	3,578.7
MC	124.1	2,601.6	4,337.6	1520.6	8,583.9
NONSTKD	393.8	0	0	0	393.8
PP	607.3	9,122.3	11,517.8	6,752.4	27,999.8
WL/DF	548.5	2,635.0	3927.6	1,928.3	9,039.4
WWP	103.3	44.5	95.6	63.4	306.8
TOTAL	**2378.0**	**17,693.1**	**21,777.8**	**10,947.0**	**52,795.9**

TABLE 3
PLAINS AREA BY CURRENT AND APPROPRIATE COVER TYPE

Losensky Cover Type	**Current Type**	**Appropriate Type**
	Acres	
ALP	692.8	179.6
DF	2,089.8	2,261.2
HW	110.9	110.9
LP	3,578.7	2,763.5
MC	8,583.9	1,479.6
PP	27,901.8	27,948.8
WL/DF	9,137.4	17,686.2
WWP	306.8	366.1
TOTAL	**52,402.1**	**52,795.9***

* Total includes 393.8 non stocked acres identified in Table 1

Updated 10/16/2001

TABLE 4
WEST LYNCH PRE-HARVEST AND POST-HARVEST COVER TYPES
For Section 14

Stand Number	Stand Acres	Treatment Acres	Appr Type	Pre-Type	Stand Age	Post-Type	Stand Age	Harvest Unit Number
1	21.9	na	LP	LP	10		10	
2	9.4	9.4	PP	PP	75	PP	75	4
3	16.7	15.0	DF	DF	90		90	3
4	21.6	21.6	PP	PP	85	PP	85	4
5	29.1	na	DF	DF	125		125	
6	16.7	16.7	WL/DF	WL/DF	95	PP	90	1
7	87	81.3	WL/DF	WL/DF	105	PP	90	1
8	12.7	4.0	WL/DF	WL/DF	65	WL/DF	65	2
9	13.6	na	PP	PP	85	PP	85	
10	27.8	27.8	WL/DF	WL/DF	85	WL/DF	85	2&4
11	55.1	55.1	WL/DF	WL/DF	100	WL/DF	100	2
12	49.3	49.3	WL/DF	WL/DF	160	WL/DF	100	2&3
13	16.7	na	WL/DF	WL/DF	160	WL/DF	160	
14	24.4	23.0	PP	PP	85	PP	85	3
15	18.4	9.0	WL/DF	WL/DF	75	WL/DF	75	3
16	8.4	5.0	PP	PP	75	PP	75	3
17	4.3	1.0	PP	PP	145	PP	145	4
18	35.6	30.0	PP	PP	145	PP	145	4
19	44.6	23.0	PP	PP	145	PP	145	4
20	22.3	3.0	PP	PP	145	PP	145	4
21	11.2	na	PP	PP	85	PP	85	
22	21.4	na	WL/DF	WL/DF	145	WL/DF	145	
23	36.1	na	WL/DF	WL/DF	160	WL/DF	160	
24	26.3	24	WL/DF	WL/DF	135	WL/DF	90	3
Total	**630.6**	**390**						

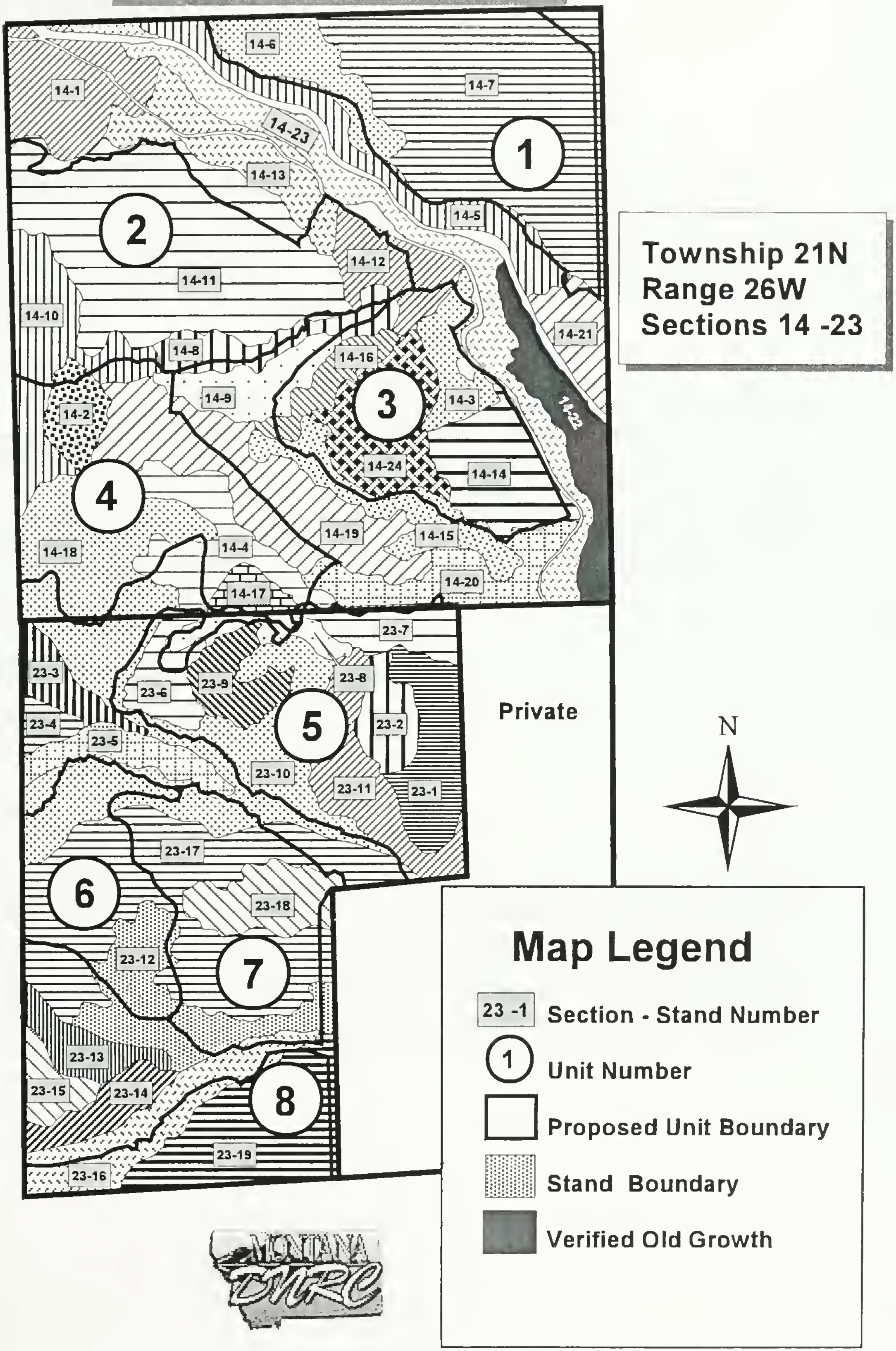
▨ = No Activity

TABLE 4 (cont.)
WEST LYNCH PRE-HARVEST AND POST-HARVEST COVER TYPES
For Section 23

Stand Number	Stand Acres	Treatment Acres	Appr. Type	Pre-Type	Stand Age	Post-Type	Stand Age	Harvest Unit Number
1	21.2	21.2	PP	PP	155	PP	155	5
2	9.5	9.5	PP	PP	135	PP	135	5
3	9.5		WL/DF	WL/DF	105	WL/DF	105	
4	3.5		PP	PP	115	PP	115	
5	12.7	12.7	WL/DF	PP	155	PP	155	6&7
6	10.7	10.7	PP	PP	145	PP	145	5
7	13.4	13.4	PP	PP	145	PP	145	5
8	8.8	3.8	PP	PP	145	PP	145	5
9	11.8	11.8	PP	PP	35	PP	35	5
10	65.7	39.0	PP	PP	125	PP	125	5&6
11	24.6	24.6	PP	PP	95	PP	95	5
12	28.2	8.3	PP	PP	125	PP	125	6&7
13	8.7		WL/DF	WL/DF	105	WL/DF	105	
14	9.0		PP	PP	125	PP	125	
15	6.9		PP	PP	145	PP	145	
16	24.2	20.0	WL/DF	WL/DF	165	WL/DF	165	8
17	80.8	77.0	PP	PP	165	PP	165	6&7
18	16.8	16.0	PP	PP	165	PP	165	7
19	34.0	29.0	PP	PP	75	PP	75	8
Total	**400**	**297**						
Sale Total	**730.6**	**687**						

▨ No activity

West Lynch Stand Map



WATERSHED, HYDROLOGY AND FISHERIES ANALYSIS FOR THE WEST LYNCH TIMBER SALE

INTRODUCTION

Water Quality and Fisheries

The primary parameter of concern for water quality is sediment. Increased sediment delivery and deposition can affect physical and biological water quality, channel stability and geomorphology. Sediment yield can be affected by a number of activities. Timber harvesting and associated road construction can increase sediment yield through exposure of bare soil. These impacts can be mitigated through implementation of Best Management Practices (BMPs), and other erosion control measures.

Water Yield

Timber harvesting and associated activities can affect the timing, distribution, and amount of water yield in a harvested watershed. Similarly, effects of stand replacement wildfire also affect water quantity and yield in a watershed. Water yields increase proportionately to the percentage of canopy removal, because removal of live trees reduces the amount of water transpired, leaving more water available for soil saturation and runoff. Canopy removal also decreases interception of rain and snow and alters snowpack distribution and snowmelt, which lead to further water yield increases. Higher water yields may lead to increases in peak flows and peak-flow duration, which can result in accelerated streambank erosion and sediment deposition.

ANALYSIS METHODS

Existing conditions for water quality and water yield were analyzed using procedures outlined in Forest Hydrology Part II (Haupt, 1974).

ANALYSIS AREA

Water Quality and Fisheries

The analysis area for water quality is the proposed project area, and all forest roads that lead into the project area from other ownership. The primary focus of the sediment delivery analysis was on the first and second order discontinuous streams and draws located within the proposed project area. Some analysis was also conducted on Lynch Creek watershed. Lynch Creek is a perennial fourth order tributary to the Clark Fork River. The Lynch Creek watershed drains approximately 30,000 acres. Elevation ranges from 2,429 feet at the Clark Fork River to 5,955 feet on ridges. Precipitation ranges from approximately 18 inches in the valley bottom to 55 inches in the upper elevations.

Water Yield

The analysis area for water yield is the intermittent, discontinuous face drainages covered by the project area.

EXISTING CONDITIONS

Regulatory Framework

Montana Surface Water Quality Standards: According to ARM 17.30.607 (1), the Lynch Creek drainage and its tributaries are all classified as B-1. Among other criteria for B-1 waters, no increases are allowed above naturally occurring levels of sediment, and minimal increases over natural turbidity. "Naturally occurring," as defined by ARM 17.30.602 (17), includes conditions or materials present during runoff from developed land where all reasonable land, soil and water conservation practices (commonly called BMPs) have been applied. Reasonable practices include methods, measures or practices that protect present and reasonably anticipated beneficial uses. These practices include but are not limited to structural and non-structural controls and operation and maintenance procedures. Appropriate practices may be applied before, during, or after completion of activities that may impact the resource.

Designated beneficial water uses within the project area are located in the Lynch Creek watershed. These beneficial uses include irrigation, livestock watering, and cold-water fisheries. None of the intermittent or discontinuous creeks in the project area support any beneficial uses.

Water Quality Limited Waterbodies: Lynch Creek is currently listed as a water quality limited water body in the 1996 303(d) list, but was not listed in the 2000 303(d) list because there was not sufficient credible data to support listing. The 303(d) list is compiled by the Montana Department of Environmental Quality (DEQ) as required by Section 303(d) of the Federal Clean Water Act and the Environmental Protection Agency (EPA) Water Quality Planning and Management Regulations (40 CFR, Part 130). Under these laws, DEQ is required to identify water bodies that do not fully meet water quality standards, or where beneficial uses are threatened or impaired. These water bodies are then characterized as "water quality limited" and thus targeted for Total Maximum Daily Load (TMDL) development. The TMDL process is used to determine the total allowable amount of pollutants in a water body of watershed. Each contributing source is allocated a portion of the allowable limit. These allocations are designed to achieve water quality standards.

The Montana Water Quality Act (MCA 75-5-701-705) also directs the DEQ to assess the quality of state waters, insure that sufficient and credible data exists to support a 303(d) listing and to develop TMDL for those waters identified as threatened or impaired. Under the Montana TMDL Law, new or expanded nonpoint source activities affecting a listed water body may commence and continue provided they are conducted in accordance with all reasonable land, soil and water conservation practices. Total Maximum Daily Loads have not been completed for the Lynch Creek drainage. DNRC will comply with the Law and interim guidance developed by DEQ through implementation of all reasonable soil and water conservation practices, including Best Management Practices and Resource Management Standards as directed under the State Forest Management Plan.

The listed causes of impairment in Lynch Creek from the 1996 303(d) list are nutrients and siltation, with the probable sources of impairment listed as agriculture.

Montana Streamside Management Zone (SMZ) Law: By the definition in ARM 36.11.312 (3), the majority of the Lynch Creek watershed is a class 1 stream. Lynch Creek has surface flow for more than 6 months each year, contributes surface flow to another body of water, and supports fish. Reaches of Lynch Creek that flow through the proposed project area are class 1 reaches. The intermittent and discontinuous streams found in the remainder of the project area are classified as follows: all draws in section 14 with the exception of Lynch Creek, do not meet the definition of a stream; the discontinuous stream in the

north portion of section 23 is a class 2 stream; the discontinuous stream in the south portion of section 23 is a class 3 stream.

Fisheries: Westslope cutthroat trout are considered a "Class A species of special concern" by the State of Montana Natural Heritage Program. Class A species are those that are limited in numbers and/or limited in habitat both in Montana and elsewhere in North America.

Water Quality and Fisheries

Lynch Creek: There is an existing source of sediment to Lynch Creek within the proposed project area. The primary source of sediment delivery to Lynch Creek is the county road. This road is paved, and follows Lynch Creek very closely. Delivery occurs primarily during periods of runoff in the winter and spring when road sanding material is washed into the creek. Livestock grazing occurs in the Lynch Creek watershed, and has led to bank trampling and sediment delivery and nutrient input in places. Some grazing occurs above the proposed project area in small parcels, but the majority of the livestock grazing in Lynch Creek takes place downstream from the project area.

Lynch Creek contains a potentially pure population of westslope cutthroat trout. No genetic testing has been conducted to confirm this. In addition, rainbow trout have been planted in the drainage, and are found incidentally. Other fish species found in Lynch Creek include an abundant population of eastern brook trout, and long nose dace.

Intermittent Streams: No sources of sediment input were identified in the intermittent streams in section 23. The stream in the north portion of section 23 has a low standard road constructed in the draw bottom. The surface of the road, and the cut and fill slopes of the road are all well vegetated and not contributing sediment to the creek. There are no crossings on this creek.

None of the intermittent streams within the project area are likely to contain fish populations due to the intermittent and/or discontinuous nature of the channels.

Water Yield

Lynch Creek: Timber harvesting and associated road construction activities have taken place in the Lynch Creek watershed since the 1950s. A water yield analysis was conducted in Lynch Creek by a DNRC hydrologist with the Lynch-Corona timber sale. This analysis showed that land management activities have led to a 4.5% annual water yield increase over a fully forested condition. This level of increase is represents a low risk of water yield impacts to Lynch Creek from forest management, and is well below a conservative 10% water yield increase threshold of concern. No evidence of water yield increases was identified in Lynch Creek during field reconnaissance during 2001.

Intermittent Streams: Stream channels of the intermittent streams in section 23 are healthy, and show no signs of impacts due to water yield increases. Channels are well vegetated with stable bed and banks. No signs of instability were found during field reconnaissance.

DIRECT AND INDIRECT EFFECTS

No Action Alternative

Direct and indirect effects of the No Action alternative would be similar to the conditions described under the existing conditions for water quality, water yield and fish populations. The water quality and water yield would be unaffected by the no action alternative, and the Lynch Creek watershed and discontinuous intermittent streams would continue to be affected by natural and pre-existing conditions.

Action Alternative

The proposed action alternative would harvest timber from approximately 675 acres. No measurable impacts to water yield are anticipated from the proposed harvesting for the following reasons: 1) The selective nature of the harvest over most of the proposed project area would leave substantial amounts of live trees on the site, and is designed to allow more rapid growth, 2) The 98 acres of the proposal that would have a seed tree prescription would not be substantial enough to change the water yield in the Lynch Creek watershed 3) The well-drained to excessively well-drained nature of the soils would produce little or no detectable change in water yield, 4) The streams and draws within the project area are stable, making them capable of handling potential water yield increases without destabilizing.

Water quality in Lynch Creek would be directly affected by installation of a portable bridge in the northern portion of section 14. Construction of bridge approaches from the existing county road may contribute sediment to Lynch Creek during periods of construction. This sediment would be minimized through implementation of applicable BMPs, including rock armor, sediment fencing, and installation of slash filters along the fill. These measures would ensure that the crossing site meets applicable water quality standards. The bridge would remain in place during the period of harvest, and be removed after completion of the sale. The bridge approaches would be left in place with all rock armor and other BMP structures.

Due to implementation of BMPs and limited opportunities for sediment input to streams, it is unlikely that fish populations or existing habitat would be adversely affected by the action alternative. All necessary permits will be obtained prior to installation of the temporary bridge across Lynch Creek. If further measures are required by these permits to reduce sediment input to Lynch Creek and associated fish habitat, they would be implemented in full.

CUMULATIVE EFFECTS

No Action Alternative

Cumulative effects of the No Action alternative on water quality and water yield would be similar to the situations described in the existing conditions. The water quality, water yield and fish populations would be unaffected by the No Action alternative, and the Lynch Creek watershed and discontinuous intermittent streams would continue to be affected by natural and pre-existing conditions.

Action Alternative

Total sediment load in Lynch Creek would be increased during the period of construction on the portable bridge. As stated above, sediment loads are expected to be minor and not a substantial risk to water quality in Lynch Creek or downstream waters. All proposed activities would meet applicable water quality standards.

Past activity in and around the proposed project area has mainly consisted of grazing and agricultural use, with some areas being managed for timber production. On sites where timber was harvested, there has been substantial vegetative and hydrologic recovery with no apparent impact on water yield increases.

The proposal is to selectively harvest the stand by commercial thinning. Watershed cumulative effects are not anticipated for the following reasons: 1) The selective nature of the harvest over most of the proposed project area would leave substantial amounts of live trees on the site, and is designed to allow more rapid growth, 2) The 98 acres of the proposal that would have a seed tree prescription would not be substantial enough to change the water yield in the Lynch Creek watershed 3) The well-drained to excessively well-drained nature of the soils would produce little or no detectable change in water yield, 4) The streams and draws within the project area are stable, making them capable of

handling potential water yield increases without destabilizing, and 5) All but 98 acres of the proposed harvesting would occur in discontinuous streams with no surface delivery to another body of water, therefore potential increases in sediment or water yield from harvest activities would not affect downstream waters.

Due to implementation of BMPs and limited opportunities for sediment input to streams, it is unlikely that fish populations or existing habitat would be adversely affected by the action alternative.

WILDLIFE ANALYSIS
FOR THE
WEST LYNCH TIMBER SALE

EXISTING CONDITION

INTRODUCTION

In the following sections, the existing environment is discussed. This description occurs on two scales. The first scale relates to the project area and/or the unit(s) proposed for harvest. Full descriptions for the project area and proposed harvest units are presented in the vegetation analysis and project plan map. The second scale (cumulative effects) describes how the project relates to the surrounding landscape. This analysis area differs by species and is defined under the existing condition for each species. If habitat does not exist in the project area or the project is not expected to affect a species, the analysis for that species was dropped from further analysis.

METHODS

To assess the existing condition of the project area and the surrounding landscape, a variety of techniques were used. Field visits, scientific literature, stand level inventory (SLI) data, aerial photography, Montana Natural Heritage Program data, and consultations with other professionals provided information for the following discussion and effects analysis. If specialized methodologies were used, they are discussed under the species section to which they apply.

COARSE FILTER ASSESSMENT

DNRC recognizes that it is an impossible and unnecessary task to assess an existing environment or the effects of proposed actions on all wildlife species. We assume that if landscape patterns and processes similar to those that species adapted to are maintained, then the full complement of species will be maintained across the landscape (DNRC 1996). This "coarse filter" approach supports diverse wildlife populations by managing for a variety of forest structures and compositions that approximate historic conditions across a landscape.

The section ranges from 3,100' to 3,760' elevation on mostly gentle slopes. Over time, due to fire suppression, tree densities increased and shade tolerant species, such as DF and GF, become more prevalent than they were historically. This situation probably benefited wildlife species that rely on shade tolerant tree species and/or closed canopy habitats, while negatively affecting species that rely on shade intolerant tree species and/or open habitats.

The vegetation analysis demonstrates that fire suppression led to current conditions that differ from historical conditions reported by Losensky (1997). Mixed-conifer (often shade-tolerant species) types increased at the expense of fire associated lodgepole pine and fire-resistant ponderosa pine, western larch and Douglas-fir. The stands proposed for treatment follow this trend. In the project area and on the Plains Unit, wildlife species that use forests dominated by Douglas fir, and grand fir probably benefited from this succession at the expense of species that require ponderosa pine, western larch, and unforested habitats. The shade tolerant tree species generally provide better snow intercept than do the shade intolerants, thus favoring species that have trouble with deep snow. Conversely, shade intolerants are often well adapted to fire, having thick bark that allows the presence of heart-rot without weakening the entire tree, thus providing excellent raw materials for snag users and cavity-dependent species.

FINE FILTER ASSESSMENT

Site-specific analyses were also conducted for individual species recognized to be sensitive or of special concern are evaluated (a "fine filter analysis"). They include wildlife species federally listed as "Threatened" or "Endangered", species listed as "Sensitive" by DNRC, and species managed as "big game" by Montana Fish, Wildlife, and Parks.

THREATENED AND ENDANGERED SPECIES

Three species indigenous to northwestern Montana are classified as "Threatened" or "Endangered" under the Endangered Species Act of 1973. The bald eagle, Canada lynx, and grizzly bear are listed as "Threatened", while the wolf is listed as "Endangered".

BALD EAGLE

The bald eagle is classified as "Threatened" and is protected under the Endangered Species Act. Strategies to protect the bald eagle are outlined in the Pacific States Bald Eagle Recovery Plan (U.S. Fish and Wildlife Service 1986) and the Montana Bald Eagle Management Plan (Montana Bald Eagle Working Group 1994). Management direction involves identifying and protecting nesting, feeding, perching, roosting, and wintering/migration areas (U.S. Fish and Wildlife Service 1986, Montana Bald Eagle Working Group 1994). No eagle nests or suitable nesting habitat are located in or near the project area, nor are eagles expected to use the project area in the winter. Therefore, this species will not be discussed further in this document.

CANADA LYNX

Lynx are listed as "Threatened" under the Endangered Species List. Currently, no recovery plan exists. Several reports have been written to summarize the research on lynx and develop a conservation strategy (Ruediger et al. 2000, Ruggiero et al. 2000).

Lynx are associated with subalpine fir forests generally between 4,000 to 7,000' in elevation in the western Montana (Ruediger et. al 2000). Lynx habitat in western mountains consists primarily of coniferous forest with plentiful snowshoe hares, mature forest for denning and cover for kittens, and densely forested cover for travel and security. Additionally, the mature forests provide habitat for red squirrels, an alternative prey source. No subalpine habitat types occur in or adjacent to the project area. Since suitable habitat is unlikely in or adjacent to the project area, Canada lynx were dropped from further analysis.

GRIZZLY BEAR

Grizzly bears are listed as "Threatened" under the Endangered Species Act. The Grizzly Bear Recovery Plan defines 6 recovery areas (US Fish and Wildlife Service 1993). This project is not located in any of the identified recovery areas. The nearest subunit of the Cabinet/Yaak Ecosystem is over 4 miles away. Grizzly bear use of the project area is unlikely. Therefore, this species will not be discussed further in this document.

WOLF

The gray wolf is listed as "Endangered" under the Endangered Species Act. The Northern Rocky Mountain Wolf Recovery Plan defines 3 recovery zones (U.S. Fish and Wildlife Service 1987). The proposed project is in the Northwest Montana Recovery Zone.

The wolf is a wide-ranging species. Adequate habitat for wolves contains adequate vulnerable prey and minimal human disturbance. Primary prey species in northwest Montana are white-tailed deer, elk, moose, and mule deer. Distribution of wolves is strongly associated with white-tailed deer winter range.

Wolves in northwest Montana typically den in late April. Wolves choose elevated areas in gentle terrain near a water source (valley bottoms), close to meadows or other openings, and near big game wintering areas for dens and rendezvous sites. Wolves are most vulnerable to human disturbance at den and rendezvous sites. Most of the project area fits this description, however, high human disturbance limits the possibility of wolf use. Wolves may pass through the area sporadically. The project is not expected to prevent use of or travel through the area. In the event an active den or rendezvous site is discovered within 1 mile of the project area, DNRC will contact USFWS to determine adequate mitigation measures to avoid adverse affects to these areas. Since wolves do not currently use the project area and this project is not expected to affect wolf habitat, this species will not be discussed further in this document.

SENSITIVE SPECIES

When conducting forest management activities, the SFLMP directs DNRC to give special consideration to the several "sensitive" species. These species are sensitive to human activities, have special habitat requirements that may be altered by timber management, or may become listed under the Federal Endangered Species Act if management activities result in continued adverse impacts. Because sensitive species usually have specific habitat requirements, consideration of their needs serves as a useful "fine filter" for ensuring that the primary goal of maintaining healthy and diverse forests is met.

A search of the Montana Natural Heritage Database did not return any sensitive species sightings in or within 1 mile of the project area. Pileated woodpecker sign (feeding holes) was observed in the project area. The following sensitive species were considered for analysis. Each sensitive species either was included in the following analysis or was dropped from further analysis for various reasons (Table 3-1).

Table 3-1. Listed sensitive species for the Northwest Land Office showing the status of these species in relation to this project.

Species	Determination - Basis
Black-backed woodpecker	No recently (<5 years) burned areas in the project area. No further analysis conducted
Boreal owl	No further analysis conducted– The project area occurs below 5,000. No suitable habitat.
Coeur d'Alene Salamander	No further analysis conducted – no moist talus or streamside talus habitat occurs in the project area.
Columbian sharp-tailed grouse	No further analysis conducted – no suitable grassland communities occur in the project area.
Common loon	No further analysis conducted - no large lakes occur in the project area
Ferruginous hawk	No further analysis conducted – no suitable grassland communities

	occur in the project area.
Fisher	**Included** – potential fisher habitat occurs in the project area.
Flammulated owl	**Included** – dry ponderosa pine habitats occur in the project area.
Harlequin duck	No potential habitat exists in the project area.
Mountain plover	No further analysis conducted – no suitable grassland communities occur in the project area.
Northern bog lemming	No further analysis conducted – no sphagnum or other fen/moss mats occur in the area.
Pileated woodpecker	**Included** – ponderosa pine, western larch/Douglas fir and mixed conifer habitats occur in the area.
Townsend's big-eared bat	No further analysis conducted – no caves or mine tunnels occur in the project area.

FLAMMULATED OWL

Flammulated owls are listed by DNRC as a sensitive species due to their use of old growth open ponderosa pine habitats. Flammulated owls prefer old stands of open ponderosa pine and Douglas-fir. They usually nest in cavities in 12-25" dbh aspen, ponderosa pine, or Douglas-fir excavated by pileated woodpeckers or northern flickers.

The uplands in the project area mainly consist of densely stocked 10-24" dbh DF and GF with mistletoe infestations, scattered large PP, WL, DF, and GF live trees and snags. Snags occur throughout the project area at varying densities. Snag and coarse woody debris density decreases near the open roads. Presently, suitable nesting trees occur in the project area. However, due to fire suppression, the stands closed in with understory trees, thus reducing habitat quality for flammulated owls.

For cumulative effects analysis, the project area and the adjacent DNRC parcels were considered. This area (2,964 acres) would provide enough area for one or more pairs of flammulated owls. Approximately 573 acres of nesting habitat occur in the cumulative effects analysis area. Other nesting habitat could occur outside DNRC lands, however, the quantity and quality is unknown.

FISHER

Fishers are listed by DNRC as a sensitive species due to their use of old growth habitats. Fishers are generalist predators and use a variety of habitat types, but are disproportionately found in stands with dense canopy. Fishers appear to be highly selective of resting and denning sites. In the Rocky Mountains, fishers appear to prefer late-successional coniferous forests for resting sites and tend to use areas within 155' of water. Such areas typically contain large live trees, snags, and logs, which are used for resting and denning sites and dense canopy cover, which is important for snow intercept. Resting and denning habitats were modeling using preferred cover types (Heinemeyer and Jones 1994), age class, and canopy closure.

Strategies that promote or maintain habitat elements important for fishers typically involve protection of valuable resting habitat near riparian areas and maintaining travel corridors with dense overhead canopy. The project area ranges from 3,100' and 3,760' in elevation with a perennial stream running in the NE portion of the project area. The riparian bottoms and some uplands likely provide forage and travel corridors for fishers. However, these habitats are isolated from other potential habitats, occur along an open road, and harvests are not planned within 165' of the perennial stream, therefore fisher are not expected to be affected appreciably by this project. No further analysis for this species will occur in this document.

PILEATED WOODPECKER

The pileated woodpecker plays an important ecological role by excavating cavities that are used in subsequent years by many other species of birds and mammals. Due to their important role as a keystone species and their preference for forested habitats in latter stages of successional development, DNRC considers the pileated woodpecker as a sensitive species.

Pileated woodpeckers excavate the largest cavities of any woodpecker. Preferred nest trees are western larch, ponderosa pine, cottonwood, and aspen, usually 20 inches dbh and larger. Pileated woodpeckers primarily eat carpenter ants, which inhabit large downed logs, stumps and snags. Aney and McClelland (1985) described nesting habitat for pileated woodpeckers as "stands of 50-100 contiguous acres, generally below 5,000' in elevation with basal areas of 100-125 ft2/ac and a relatively closed canopy." The feeding and nesting habitat requirements, including large snags or decayed trees for nesting and large downed wood for feeding, closely tie these woodpeckers to mature forests with old growth characteristics. The density of pileated woodpeckers is positively correlated with the amount of dead and/or dying wood in a stand (McClelland 1979). Using SLI data, the above information was modeled to estimate pileated woodpecker habitat.

The project area contains 230 acres of scattered patches of potential nesting habitat. Snags occur sporadically throughout the area, but are in lower densities near the open roads. The surrounding area appears to be similar to the project area.

For cumulative effects analysis, the project area and the adjacent DNRC parcels were considered. This area (2,964 acres) would provide enough area for one or more pairs of pileated woodpeckers. Approximately 517 acres of nesting habitat occur in the cumulative effects analysis area. Additionally, 2,219 acres provide mature timbered stands that could provide foraging habitat. Other habitat could occur outside DNRC lands, however, the quantity and quality is unknown.

BIG GAME SPECIES

The project area provides winter habitat for white-tailed deer. Other big game species (mule deer, elk, moose) might travel through or summer in the project area, but the area does not provide particularly important habitat for these species. Therefore, only white-tailed deer will be considered further in this document. FWP mapped the northern and western edges of the project area as white-tailed deer winter range. This area receives lower amounts of snowfall than winter ranges in other areas. Key habitat components for white-tailed deer winter range include thermal cover and reduced human disturbance. White-tailed deer are susceptible to high winter mortality during winters with high snow accumulations, but tend to tolerate road use more than other big game species. However, human disturbance can increase use of important fat reserves.

On winter range in the project area, thermal cover occupies 630 acres (82% of the project area). The remaining portions of the project area provide forested travel corridors. Approximately, 101 acres of thermal cover occurs along the open county road. The understory of many of these stands includes spotted knapweed, which reduces the quality of winter range. Timber harvests could reduce thermal cover, increase hunter access, and increase the spread of noxious weeds, resulting in a reduction in the carrying capacity of this winter range to support white-tailed deer.

For cumulative effects analysis, the project area and the adjacent DNRC parcels in delineated winter range were considered. This area (1,172 acres) approximates the amount of land a wintering elk would use. Approximately 774 acres of thermal cover occur in the cumulative effects analysis area. Other thermal cover could occur outside DNRC lands.

SPECIAL AND UNIQUE HABITATS

No special or unique habitats were found in any harvest units or in the project area.

ENVIRONMENTAL CONSEQUENCES

Direct and Indirect Effects to Coarse Filter

Action and No Action Alternatives

Under the No Action Alternative, forest conditions would continue to change toward shade tolerant species with high canopy cover. These conditions would favor species that use these types of habitats, such as golden and ruby-crowned kinglets. Over time, shade intolerant trees would die out and would not expected to be replaced in the near term. Under the Action Alternative, approximately 675 acres of forest canopy would be opened up to some extent. Additionally, shade intolerant trees would be retained, while shade tolerant trees would be removed. These conditions would lead to more open habitats with shade intolerant trees. In proposed seed tree harvests, regeneration of shade intolerant trees is expected. These conditions would favor species such as mountain bluebirds.

Cumulative Effects Coarse Filter

Action and No Action Alternatives

Under the No Action Alternative, the existing patches would continue to develop as habitats with shade tolerant trees resulting in dense, high canopy cover. These conditions would perpetuate the existing amount of interior habitat. Under the Action Alternative, forest openings would be constructed. These conditions would decrease the amount of interior habitat, while increasing edge (area between different habitats). The varying amount of interior, edge, and habitat types alters the species of wildlife in an area. These areas would contribute to the interspersion of varying habitats in the area, ranging from agricultural and forested habitat. The Action Alternative would benefit generalist species that use edges and/or differing habitats, while limiting habitat to interior species.

Direct and Indirect Effects to Flammulated Owls

Action and No Action Alternatives

Under the No Action Alternative, flammulated owl habitat would be maintained in poor condition and would continue to decline. Under the Action Alternative, timber harvest would open the canopy of the forested areas and favor ponderosa pine over 673 acres, while retaining as many snags as possible (~5 snags/acre >14"). This action would benefit flammulated owl by enhancing habitat quality and quantity.

Cumulative Effects to Flammulated Owl

Action and No Action Alternatives

Under the No Action Alternative, flammulated owl habitat would continue to decline throughout the area, resulting in minor adverse effects to flammulated owls. Under the Action Alternative, some pockets of habitat (673 acres) would be enhanced, resulting in minor positive effects to owls. This treatment is expected to increase available habitat on 562 acres, while maintaining 111 acres of existing habitat. The increase in habitat from 537 to 1,099 acres of habitat is expected to produce benefits to Flammulated owls. These pockets of habitats could provide dispersal areas and new breeding territories. These increases would add Flammulated owl habitat in the area and would be additive to the unknown quantity and quality of habitat on adjacent lands.

Direct and Indirect Effects to Pileated Woodpecker

Action and No Action Alternatives

Under the No Action Alternative, timber harvest would not occur and the existing shade-intolerant trees would continue to grow in diameter and die, thus providing pileated woodpecker nesting and foraging habitat. However, as these trees die out, replacement trees (shade-intolerant) would not be present in the stand barring any disturbance. Therefore under this alternative, pileated woodpecker habitat would increase through time, then decline as shade intolerant tree species are replaced by less-preferred shade tolerant species. No short-term additional effects to pileated woodpeckers would occur under this alternative. However, in the longer-term, pileated woodpecker use of the area could decline.

Under the Action Alternatives, nesting structure in snags, coarse woody debris, numerous leave trees, and snag recruits would be retained, but quality nesting habitat may decline on 98 acres due to the removal of the midlevel forest canopy layer and reduction of overstory canopy cover. The resulting open canopy may allow for natural regeneration and growth of replacement shade-intolerant tree species to provide nesting structure in the distant future. The existing trees would increase in growth due to reduced competition, resulting in potential recruitment of large snags in the future. Snag numbers may decline due to the harvest operations, resulting in decreased foraging habitat. However, these losses are expected to be minimized due to the logging practices proposed. The removal of encroaching GF and DF may reduce feeding opportunities in the near and distant future. Most snags cut to reduce safety hazards would be left on site along with cull trees and butts. These would continue to provide foraging sites for pileated woodpeckers. Snags left on site are susceptible to firewood cutting. Slash would be left on edges of harvest units and roads near open roads to prevent motorized access to the units and associated firewood cutting. This alternative would alter habitat

quality on 435 acres of forage habitat. This alternative could result in minor adverse effects to pileated woodpeckers in the short-term, but minor positive effects in the longer-term by promoting preferred cover types and large trees.

Cumulative Effects to Pileated Woodpecker

Action and No Action Alternatives

Under the no action alternative, no additional habitat would be modified. Nesting habitat would be retained at 517 acres with 2,219 acres of foraging habitat available in the analysis area. Under the Action Alternative, nesting habitat quality would be reduced by 98 acres, assuming the reduction in canopy precludes nesting habitat, to 419 acres of nesting habitat on DNRC lands in and adjacent to the project area. Foraging habitat could be altered, but is expected to retain some foraging habitat with retention of available snags. The reduction in nesting quality on 24 acres of scattered habitats is expected to result in negligible effects to pileated woodpeckers due to the amount of remaining habitat. These habitats would still provide foraging opportunities, therefore, foraging habitat would not be affected substantially. Reduction in the quality of nesting habitat combined with the retention of feeding substrate is expected to produce minor risks of decreased pileated woodpecker use of the area.

Direct and Indirect Effects to Big Game (White-tailed deer)

Action and No Action Alternatives

Under the No Action Alternative, white-tailed deer habitat and security would not be altered in the short-term. In the longer term, succession would continue to occur resulting in increased thermal and possible hiding cover, while reducing forage. Under the Action Alternative, canopy cover would be reduced to about 50% in Units 2-8 (129 acres) on delineated winter range. In unit 1 (98 acres within delineated winter range), a seedtree harvest would reduce canopy coverage to 10-15%. In Units 2-8 (129 acres), the overstory reduction would result in a reduction in quality thermal cover, while unit 1 (98 Acres) would result in a loss of thermal cover. The reduction in canopy is expected to result in increased forage production. Since this is not a high snow accumulation area, the importance of thermal cover is reduced. In heavy snow accumulation years, thermal cover becomes more important. The proposed harvest would not prevent movement through the area. Therefore, habitat modification is expected to negligibly affect white-tailed deer populations, but might result in minor habitat shifts to take advantage of increases in forage or retention of thermal cover or minor increases in winter mortality during severe winters.

Under the No Action Alternative, white-tailed deer security would remain unchanged and illegal motorized use would continue. Under the action alternative, 2.4 miles of new road would be constructed, 0.5 miles of road would be obliterated, and 4.6 miles of road would be abandoned. The proposed transportation plan would restrict all the non-county roads into the section. Additionally, roads that are bermed or units that occur along the open roads would have slash on a portion of the road to further reduce potential for illegal motorized use. Berms would also be installed along the property line where illegal motorized access is occurring. These measures are expected to reduce unauthorized use and increase white-tailed deer security.

Cumulative Effects to Big Game

Action and No Action Alternatives

Under the No Action Alternative, forage production is expected to decrease as succession occurs in the forest and the abundance of cover would remain unchanged in the short term and increase in density over the long term. No changes in security are expected from under this alternative. Therefore, no additional effects are expected under this alternative. Under the Action Alternative, thermal cover would be removed from 98 acres and reduced on 129 acres in the winter range, resulting in 547 acres of thermal cover in the project area and adjacent DNRC lands. Additionally, most other adjacent lands are intact and provide some level of thermal cover. In the treated areas, forage is expected to increase. Some localized minor negative effects could occur due to removal of thermal cover, however, some local minor benefits could occur due to increase in forage. Security habitat in winter range is expected to increase if the road closures are successful. The effects of this alternative to white-tailed deer in the area are expected to result in minor and localized negative effects due to removal of thermal cover and minor positive effects due to small increases in forage production.

Attachment 3: Prescriptions

TIMBER STAND/HARVEST UNIT PRESCRIPTIONS

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Harvest Unit: 1 **Harvest Unit Acres:** 98

Elevation: 3500' **Slope:** 0% **Aspect:** Flat

Habitat Types: PSME/VACA
Soil Type: Deep, well drained, Silt to gravely loam textured; silt surface derived from volcanic ash influenced loess.
Description of Existing Stand: This unit is located in the northeast corner of section 14 on a relatively flat bench. The unit is comprised of mainly one stand. The overstory consists of Douglas-fir (80%), western larch (10%), and Ponderosa Pine (10%). Overstory age averages 90 years, but scattered older trees remain as remnants of pre-1910 stands. DBH ranges from 10" to 24" in all species. Height of all tree species averages 75' to 90', with western larch occasionally reaching 100'. Overstory trees are evenly distributed and form a closed upper canopy layer. The stand has a multi-storied structure. Regeneration is limited to scattered groupings of Douglas-fir and Lodgepole pine. Insect and disease activity is found in all species. The Douglas-fir is heavily affected by a variety of root diseases. Douglas-fir beetle (Dendroctonus pseudotsugae) are active and expanding rapidly through the Douglas-fir. Mountain pine beetle (Dendroctonus ponderosae) is present in lodgepole pine and is evident in the Ponderosa pine. Dwarf mistletoe is present at very high occurrence in the Douglas-fir, with lesser occurrences in western larch and lodgepole pine. Large snags (>14" DBH) are common, generally found at 10 to 12 per acre. Surface fuel loading of down material ranges from 20 to 40 tons per acre.

Treatment Objectives:

- Promote the stand components of Ponderosa pine and western larch into a traditionally appearing open stand configuration.
- Reduce occurrence of insect and disease activity within this stand.
- Reduce fuel loadings along boundaries adjacent to private lands.

Prescribed Treatment:

- Reduce basal area to an average of 40 ft^2/acre. Retain large diameter Ponderosa pine and western Larch to meet the basal area specifications.
- Thin from below to reduce stocking in Douglas fir, lodgepole pine, and grand fir.
- Remove trees affected by insects, root rots, dwarf mistletoes, or other diseases.
- Retain all snags > 14" DBH, and all obvious large diameter disease free trees.
- Open canopy along boundaries adjacent to private property.
- Cut all non-merchantable decadent trees less than 4" DBH

Harvest Method:

- Tractor skidding is applicable for this unit.

- Individual tree selection with trees marked to leave.

Hazard Reduction:

- Excavator pile and burn all slash in excess of retention requirements.

- Burn landing piles following harvest activity.

Regeneration/Site Preparation:

- Regeneration is a primary objective for this unit and stand. No specific site preparation activities are planned.

- Spatial openings created by the proposed treatments should provide opportunities for establishment of natural regeneration.

Anticipated Future Treatment:

- The proposed treatment regenerates the area towards characteristics of an open Ponderosa Pine stand.

- Stand conditions would be monitored regular intervals following the project period. Salvage or sanitation operations associated with insect or disease occurrences, extreme weather events, or other unexpected circumstances would be evaluated for action on a case-by-case basis.

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Harvest Unit: 2 **Harvest Unit Acres:** 111

Elevation: 3500' to 3700' **Slope:** 0% ↔35% **Aspect:** North to North East

Habitat Type: PSME/VACA-ARUV and ABGR/LIBO
Soil Type: Deep, well drained, gravelly to sandy textured loam; volcanic ash influenced is intermittent; average duff layer of approximately one inch.
Description of Existing Stand: This unit is composed of three separate stands. The unit extends from the old county road westward to the section property boundary. The unit is composed of a dense mixed conifer stands. The overstory consists of Douglas-fir (80%), western larch (10%), and Ponderosa pine (10%). Overstory age averages 80 to 120 years. Remnants of pre-1910 stands can be found. DBH ranges from 8" to 24" in western larch and Ponderosa pine species. Height of all tree species averages 75' to 90', with some western larch reaching over 100'. Overstory trees are irregularly distributed and form a somewhat broken canopy layer. An intermediate canopy of Douglas-fir is found in some areas but is not consistent across the unit. Regeneration is limited to scattered groups of Douglas-fir. Insect and disease activity is found at moderate levels. Douglas-fir is affected by a variety of root diseases. Douglas-fir beetle (Dendroctonus pseudotsugae) are active in Douglas-fir. Dwarf mistletoe is present in Douglas-fir but not in abundance. Large snags (> 14" DBH) are found at an average of 4 to 6 per acre. Surface fuel loading of down material averages 20 to 25 tons per acre.
Treatment Objectives:

- Reduce overstocking and promote productive growth in the residual stand.
- Commercially thin from below to reduce the stand volume by 50% favoring dominant and co-dominant tree species.
- Reduce the presence of insect and disease activity and the threat of expanding activity to surrounding timber stands.

Prescribed Treatment:

- Reduce mature overstory volume by approximately 50%. Favor ponderosa pine and western larch wherever possible.
- Retain all snags > 14" DBH.
- Retain groupings and clumps of healthy re-generation in the 10 to 15 foot class.
- Target the stand to a basal area of approximately 60 ft^2.

Harvest Method:

- Tractor skidding is applicable for this unit.
- Individual tree selection with trees marked to cut.

Hazard Reduction:

- Excavator pile and burn all slash in excess of retention requirements.

- Burn landing piles following harvest activity.

Regeneration/Site Preparation:

- Regeneration is not a primary objective for this unit and stand. No specific site preparation activities are planned.

- Spatial openings created by proposed treatment should provide opportunities for regeneration of all tree species present in this stand.

Anticipated Future Treatment:

- The proposed treatment moves this area toward its appropriate cover type, and advances a portion of the stand toward a more healthy and productive forest by retaining some of the older more productive trees. No future treatment is anticipated at this time.

- Stand conditions would be monitored at regular intervals following the project period. Salvage or sanitation operations associated with insect and disease outbreaks, extreme weather events, or other unexpected circumstances would be evaluated for action on a case-by-case basis.

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Harvest Unit: 3 **Harvest Unit Acres: 79**
Elevation: 3300' **Slope:** 0-35% **Aspect:** Flat to Southeast
Habitat Type: PSME/VACA CARU
Soil Type: Deep, well drained, gravelly to sandy textured loam; volcanic ash influenced is intermittent; average duff layer of approximately one inch.
Description of Existing Stand: This unit lies along the old county road and follows a dry gully into the center of section 14. The overstory is composed of Douglas-fir (70%), Ponderosa pine (25%), and western larch (5%). The average overstory is 90 to 100 years old. Overstory trees are evenly distributed and form a well-closed upper canopy layer. DBH ranges from 12" to 20" in all species. Height of all tree species averages 75' to 90', with scattered western larch reaching 100'. An intermediate canopy layer of suppressed and poorly formed Douglas-fir mixed with Ponderosa pine is present. Advanced regeneration of Douglas-fir is found in small pockets scattered through the unit. New regeneration is rarely found and is limited to small pockets of lodgepole pine. Very little Ponderosa pine or western larch regeneration is present at this time. Insect and disease activity is found at low to moderate levels. Root diseases are active in Douglas-fir, dwarf mistletoes are present in Douglas-fir and western larch, and Douglas-fir beetle (Dendroctonus pseudotsugae) is active in the Douglas-fir. Large snags (> 14" DBH) are scattered throughout the stand, generally found 2 to 4 per acre. Surface fuel loading of down material averages 24 tons per acre.

Treatment Objectives:

- Reduce overstocking and promote productive growth in the residual stand.
- Commercially thin from below to reduce the stand volume by 50% favoring dominant and co-dominant tree species.
- Reduce the presence of insect and disease activity and the threat of expanding activity to surrounding timber stands.

Prescribed Treatment:

- Reduce mature overstory volume by approximately 50%. Favor ponderosa pine and western larch wherever possible.
- Retain all snags > 14" DBH.
- Retain groupings and clumps of healthy re-generation in the 10 to 15 foot class.
- Target the stand to a basal area of approximately 60 ft^2.

Harvest Method:

- Tractor skidding is applicable for this unit.
- Individual tree selection with trees marked to cut.

Hazard Reduction:

- Excavator pile and burn all slash in excess of retention requirements.
- Burn landing piles following harvest activity.

Regeneration/Site Preparation:

- Regeneration is not a primary objective for this unit and stand. No specific site preparation activities are planned.

- Spatial openings created by proposed treatment should provide opportunities for regeneration of all tree species present in this stand.

Anticipated Future Treatment:

- The proposed treatment moves this area toward its appropriate cover type, and advances a portion of the stand toward a more healthy and productive forest by retaining some of the older more productive trees. No future treatment is anticipated at this time.

- Stand conditions would be monitored at regular intervals following the project period. Salvage or sanitation operations associated with insect and disease outbreaks, extreme weather events, or other unexpected circumstances would be evaluated for action on a case-by-case basis.

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Harvest Unit: 4 **Harvest Unit Acres:** 100

Elevation: 3600' **Slope:** 0-35% **Aspect:** Flat on top, south to southeast generally with some northeast exposures.

Habitat Type: PSME/ARUV,CARU,PIPO and MIMC

Soil Type: Soils are deep and well drained. Textures are gravelly loam to sandy loam and in some areas a clayish loam. Volcanic ash is intermittent, infiltration is rapid and soil moisture retention is moderate.

Description of Existing Stands: This unit encompasses the south west corner of section 14. The unit is comprised by several stands. The overstory consists of Douglas-fir (80%), western larch (10%), and Ponderosa pine (10%). Overstory ages average 90 to 120 years. The overstory DBH ranges from 10" to 18" in all species. Height of all tree species averages 75' to 110'. Overstory distribution is generally even and creates a moderately closed upper canopy layer. An intermediate layer is not generally present. Little regeneration of any species is found. Occurrence of insect and disease activity is low, but some Douglas-fir beetle (Dendroctonus pseudotsugae) are present in Douglas-fir. Mountain pine beetle (Dendroctonus ponderosae) is present in lodgepole pine and is evident in the Ponderosa pine. Dwarf mistletoe is present in Douglas-fir at low levels. Large snags (> 14" DBH) are found at an average of 4 to 6 per acre. Surface fuel loading of down material averages 25 to 35 tons per acre.

Treatment Objectives:

- Reduce overstocking and promote productive growth in the residual stand.
- Commercially thin from below to reduce the stand volume by 50% favoring dominant and co-dominant tree species.
- Reduce the presence of insect and disease activity and the threat of expanding activity to surrounding timber stands.

Prescribed Treatment:

- Reduce mature overstory volume by approximately 50%. Favor ponderosa pine and western larch wherever possible.
- Retain all snags > 14" DBH.
- Retain groupings and clumps of healthy re-generation in the 10 to 15 foot class.
- Target the stand to a basal area of approximately 60 ft^2.

Harvest Method:

- Tractor skidding is applicable for this unit.
- Individual tree selection with trees marked to cut.

Hazard Reduction:

- Excavator pile and burn all slash in excess of retention requirements.

- Burn landing piles following harvest activity.

Regeneration/Site Preparation:

- Regeneration is not a primary objective for this unit and stand. No specific site preparation activities are planned.

- Spatial openings created by proposed treatment should provide opportunities for regeneration of all tree species present in this stand.

Anticipated Future Treatment:

- The proposed treatment moves this area toward its appropriate cover type, and advances a portion of the stand toward a more healthy and productive forest by retaining some of the older more productive trees. No future treatment is anticipated at this time.

- Stand conditions would be monitored at regular intervals following the project period. Salvage or sanitation operations associated with insect and disease outbreaks, extreme weather events, or other unexpected circumstances would be evaluated for action on a case-by-case basis.

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Harvest Unit: 5 **Harvest Unit Acres:** 119

Elevation: 3300' **Slope:** 0-35% **Aspect:** South, Southeast

Habitat Type: PSME/
Soil Type: Deep, well drained, gravelly to sandy textured loam; volcanic ash influenced is intermittent; average duff layer of approximately one inch.
Description of Existing Stand: This Unit extends from the eastern property boundary in the Northeast quarter section of section 23 Township 21N, Range 26W along the SMZ of an intermittent stream on the south side, to the northern border of Section 23. Portions of six mixed conifer stands are included within this harvest unit. The overstory consists of Douglas-fir (65%), Ponderosa pine (25%), and other conifer species (10%). Overstory age averages 100 to 130 years. The overstory DBH ranges from 12" to 24" in all species. Height of all tree species averages 75' to 100'. Overstory trees are generally evenly distributed and form a loosely closed upper canopy layer. An intermediate canopy layer of suppressed Douglas-fir and Ponderosa pine are present in some areas, but not consistently found across the unit. Regeneration is limited to scattered groupings of lodgepole pine and Douglas-fir, but is not consistently found across the unit. Insect and disease activity is found at significant levels at this time. Douglas-fir are affected by a variety of root diseases. Douglas-fir beetle (Dendroctonus pseudotsugae) are active and expanding rapidly through the Douglas-fir. Mountain pine beetle (Dendroctonus ponderosae) is present in lodgepole pine and is evident in the Ponderosa pine. Dwarf mistletoe is present in both Douglas-fir and western larch. Large snags (>14" DBH) are common, generally found at 4 to 6 per acre. Surface fuel loading of down material ranges from 15 to 20 tons/acre.
Treatment Objectives:

- Reduce overstocking and promote productive growth in the residual stand.
- Commercially thin from below to reduce the stand volume by 50% favoring dominant and co-dominant tree species.
- Reduce the presence of insect and disease activity and the threat of expanding activity to surrounding timber stands.

Prescribed Treatment:

- Reduce mature overstory volume by approximately 50%. Favor ponderosa pine and western larch wherever possible.
- Retain all snags > 14" DBH.
- Retain groupings and clumps of healthy re-generation in the 10 to 15 foot class.
- Target the stand to a basal area of approximately 60 ft^2.

Harvest Method:

- Tractor skidding is applicable for this unit.
- Individual tree selection with trees marked to cut.

Hazard Reduction:

- Excavator pile and burn all slash in excess of retention requirements.

- Burn landing piles following harvest activity.

Regeneration/Site Preparation:

- Regeneration is not a primary objective for this unit and stand. No specific site preparation activities are planned.

- Spatial openings created by proposed treatment should provide opportunities for regeneration of all tree species present in this stand.

Anticipated Future Treatment:

- The proposed treatment moves this area toward its appropriate cover type, and advances a portion of the stand toward a more healthy and productive forest by retaining some of the older more productive trees. No future treatment is anticipated at this time.

- Stand conditions would be monitored at regular intervals following the project period. Salvage or sanitation operations associated with insect and disease outbreaks, extreme weather events, or other unexpected circumstances would be evaluated for action on a case-by-case basis.

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Harvest Unit: 6 **Harvest Unit Acres:** 49

Elevation: 3400' **Slope:** 25-35% **Aspect:** East, Northeast

Habitat Type: PSME/SPBE,ARUV,PIPO
Soil Type: Soils are deep and well drained. Textures are gravelly loam to sandy loam and in some areas a clayish loam. Volcanic ash is intermittent, infiltration is rapid and soil moisture retention is moderate.
Description of Existing Stand: This Unit is located along the western boundary of section 23 Township 21N, Range 26W. It is located in the middle of the section. The structure of the unit is two tiered. The overstory consists of Douglas-fir (70%), western larch (15%), and Ponderosa pine (15%). Overstory age averages 100 to 140 years. DBH ranges from 10" to 20" in all species. Height of all tree species averages 75' to 90'. Overstory trees are evenly distributed and form a loosely closed canopy layer. A scattered intermediate layer of suppressed Douglas-fir and Ponderosa pine is present. Regeneration is limited to scattered groupings of Douglas-fir and lodgepole pine. Insect and disease activity is found at moderate levels in all species. The Douglas-fir is affected by a variety of root diseases. Douglas-fir beetle (Dendroctonus pseudotsugae) are active and expanding in the Douglas-fir. Mountain pine beetle (Dendroctonus ponderosae) is present in lodgepole pine and is evident in the Ponderosa pine. Dwarf mistletoe is present in Douglas-fir and western larch. Large snags (> 14" DBH) are found at an average of 6 to 10 per acre. Surface fuel loading of down material ranges from 15 to 25 tons per acre.
Treatment Objectives:

- Reduce overstocking and promote productive growth in the residual stand.
- Commercially thin from below to reduce the stand volume by 50% favoring dominant and co-dominant tree species.
- Reduce the presence of insect and disease activity and the threat of expanding activity to surrounding timber stands.

Prescribed Treatment:

- Reduce mature overstory volume by approximately 50%. Favor ponderosa pine and western larch wherever possible.
- Retain all snags > 14" DBH.
- Retain groupings and clumps of healthy re-generation in the 10 to 15 foot class.
- Target the stand to a basal area of approximately 60 ft^2.

Harvest Method:

- Tractor skidding is applicable for this unit.
- Individual tree selection with trees marked to cut.

Hazard Reduction:

- Excavator pile and burn all slash in excess of retention requirements.

- Burn landing piles following harvest activity.

Regeneration/Site Preparation:

- Regeneration is not a primary objective for this unit and stand. No specific site preparation activities are planned.

- Spatial openings created by proposed treatment should provide opportunities for regeneration of all tree species present in this stand.

Anticipated Future Treatment:

- The proposed treatment moves this area toward its appropriate cover type, and advances a portion of the stand toward a more healthy and productive forest by retaining some of the older more productive trees. No future treatment is anticipated at this time.

- Stand conditions would be monitored at regular intervals following the project period. Salvage or sanitation operations associated with insect and disease outbreaks, extreme weather events, or other unexpected circumstances would be evaluated for action on a case-by-case basis.

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Harvest Unit: 7 **Harvest Unit Acres:** 70

Elevation: 3200' **Slope:** 0-35% **Aspect:** East, Northeast

Habitat Type: PSME/SPBE,ARUV,PIPO
Soil Type: Soils are deep and well drained. Textures are gravelly loam to sandy loam and in some areas a clayish loam. Volcanic ash is intermittent, infiltration is rapid and soil moisture retention is moderate.
Description of Existing Stand: This Unit is located along the eastern property boundary of section 23 Township 21N, Range 26W. It is located in the middle of the section. The structure of the unit is two tiered. The overstory consists of Douglas-fir (70%), western larch (15%), and Ponderosa pine (15%). Overstory age averages 100 to 140 years. DBH ranges from 10" to 20" in all species. Height of all tree species averages 75' to 90'. Overstory trees are evenly distributed and form a loosely closed canopy layer. A scattered intermediate layer of suppressed Douglas-fir and Ponderosa pine is present. Regeneration is limited to scattered groupings of Douglas-fir and lodgepole pine. Insect and disease activity is found at moderate levels in all species. The Douglas-fir is affected by a variety of root diseases. Douglas-fir beetle (Dendroctonus pseudotsugae) are active and expanding in the Douglas-fir. Mountain pine beetle (Dendroctonus ponderosae) is present in lodgepole pine and is evident in the Ponderosa pine. Dwarf mistletoe is present in Douglas-fir and western larch. Large snags (> 14" DBH) are found at an average of 6 to 10 per acre. Surface fuel loading of down material ranges from 15 to 25 tons per acre.
Treatment Objectives:

- Reduce overstocking and promote productive growth in the residual stand.

- Commercially thin from below to reduce the stand volume by 50% favoring dominant and co-dominant tree species.

- Reduce the presence of insect and disease activity and the threat of expanding activity to surrounding timber stands.

Prescribed Treatment:

- Reduce mature overstory volume by approximately 50%. Favor ponderosa pine and western larch wherever possible.

- Retain all snags > 14" DBH.

- Retain groupings and clumps of healthy re-generation in the 10 to 15 foot class.

- Target the stand to a basal area of approximately 60 ft^2.

Harvest Method:

- Tractor skidding is applicable for this unit.

- Individual tree selection with trees marked to cut.

Hazard Reduction:

- Excavator pile and burn all slash in excess of retention requirements.

- Burn landing piles following harvest activity.

Regeneration/Site Preparation:

- Regeneration is not a primary objective for this unit and stand. No specific site preparation activities are planned.

- Spatial openings created by proposed treatment should provide opportunities for regeneration of all tree species present in this stand.

Anticipated Future Treatment:

- The proposed treatment moves this area toward its appropriate cover type, and advances a portion of the stand toward a more healthy and productive forest by retaining some of the older more productive trees. No future treatment is anticipated at this time.

- Stand conditions would be monitored at regular intervals following the project period. Salvage or sanitation operations associated with insect and disease outbreaks, extreme weather events, or other unexpected circumstances would be evaluated for action on a case-by-case basis.

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Harvest Unit: 8 **Harvest Unit Acres:** 49

Elevation: 3200' **Slope:** 0-40% **Aspect:** Northeast

Habitat Type: PSME/VACA ABGR/LIBO
Soil Type: Soils are deep and well drained. Texture is gravelly loam to a sandy loam. Volcanic ash surface soils are mixed with colluvium on northerly microsites.
Description of Existing Stand: This unit lies along the southern boundary of the southwest quarter section of section 23 Township 21N, Range 26W.The overstory consists of Douglas-fir (70%), Ponderosa pine (25%), and other conifer species (5%). Overstory age averages 100 and 140 years. The average DBH of the overstory is 10" to 20" in all species. Height of all tree species averages 75' to 90'. The overstory canopy is very loosely formed at the lower elevations, but closes to a tight cover at the upper areas of the unit. A scattered intermediate layer of suppressed Douglas-fir and western larch is present. Regeneration is limited to scattered groupings of Douglas-fir and grand fir. Insect and disease activity is found at moderate levels in all species. The Douglas-fir is affected by a variety of root diseases. Douglas-fir beetle (Dendroctonus pseudotsugae) are active and expanding in the Douglas-fir. Mountain pine beetle (Dendroctonus ponderosae) is present in lodgepole pine and is evident in the Ponderosa pine. Dwarf mistletoe is present in Douglas-fir and western larch. Large snags (> 14" DBH) are found at an average of 6 to 10 per acre. Surface fuel loading of down material ranges from 15 to 25 tons per acre.

Treatment Objectives:

- Reduce overstocking and promote productive growth in the residual stand.
- Commercially thin from below to reduce the stand volume by 50% favoring dominant and co-dominant tree species.
- Reduce the presence of insect and disease activity and the threat of expanding activity to surrounding timber stands.

Prescribed Treatment:

- Reduce mature overstory volume by approximately 50%. Favor ponderosa pine and western larch wherever possible.
- Retain all snags > 14" DBH.
- Retain groupings and clumps of healthy re-generation in the 10 to 15 foot class.
- Target the stand to a basal area of approximately 60 ft^2.

Harvest Method:

- Tractor skidding is applicable for this unit.
- Individual tree selection with trees marked to cut.

Hazard Reduction:

- Excavator pile and burn all slash in excess of retention requirements.

- Burn landing piles following harvest activity.

Regeneration/Site Preparation:

- Regeneration is not a primary objective for this unit and stand. No specific site preparation activities are planned.

- Spatial openings created by proposed treatment should provide opportunities for regeneration of all tree species present in this stand.

Anticipated Future Treatment:

- The proposed treatment moves this area toward its appropriate cover type, and advances a portion of the stand toward a more healthy and productive forest by retaining some of the older more productive trees. No future treatment is anticipated at this time.

- Stand conditions would be monitored at regular intervals following the project period. Salvage or sanitation operations associated with insect and disease outbreaks, extreme weather events, or other unexpected circumstances would be evaluated for action on a case-by-case basis.

Attachment 4:
Project Plan

MEMO

To: Jon Hayes, Plains Forest Management Supervisor

From: Bill Wright, Kalispell-Plains Unit Manager

Subject: West Lynch Timber Sale

Date: June 9, 1999

Primary Objective

The primary objective of the West Lynch Timber Sale is to generate revenue for the Public School Grant. This action will be accomplished in a silvicultural manner that will provide for revenue to the Grant over time. The volume of this sale is not set and is part of the current timber harvest goals of the Northwestern Land Office.

Secondary Objectives

The secondary objectives for this sale are as follows:

1. Improve overall forest health by silviculturally treating the timber stand to reduce insect and disease.
2. Upgrade road system to meet BMP/SMZ standards.
3. Treat the timber stand to reduce the presents of fire hazard that could impact the subdivision in Section 22.

In planning and preparing this timber sale, management direction of the State Forest Land Management Plan shall be closely followed. All applicable Streamside Management Zone (SMZ) rules and regulations and all Best Management Practices (BMP) guidelines shall be applied.

cc: Plains Cal File

Action Alternative
Objectives and Specifications
For the
West Lynch Timber Sale Project

The objectives of the West Lynch Timber Sale project are to generate revenue for the Public Building Fund, increase growth rates in western larch and ponderosa pine, reduce the occurrence of insect and disease infestations, and reduce the existing stands susceptibility to loss from wild land fires. The project would harvest approximately 21,396 tons of timber from eight harvest units encompassing approximately 687 acres (see Table 1). To access the timber an estimated 4.28 miles of new road would be constructed, and 4.74 mile of road would be upgraded (see Table 2 and West Lynch Timber Sale Proposed Unit and Transportation Plan).

Activities in Unit 1 would convert 98 acres of WL/DF cover type in the 100-150 year age class to a PP cover type in the 0-39 year age class (see Table 1). The change in cover type is due to the heavy infestation of dwarf mistletoe on this unit. Healthy western larch in this unit would be retained. This unit would require access over a temporary bridge across Lynch Creek, and 0.81 miles of new road construction. A permit from the Department of Fish, Wildlife and Parks would be obtained for the temporary bridge. Insect and disease infested trees would be removed. Snags greater than 14 inches DBH would be retained. Fuel loadings would be reduced to 5 - 10 tons per acre. The canopy would be opened 100 feet along the section 14 boundaries (see West Lynch Timber Sale Proposed Units and Transportation Plan map). Slash would be excavator piled and burned. Road access into the unit would be closed by the removal of the temporary bridge across Lynch Creek (see Table 2 and Post Harvest Road Plan map). The remaining roadbed would be seeded and spot treated with chemicals to reduce the occurrence on noxious weeds.

Activities in Units 2-8 would harvest timber from approximately 577 acres and produce approximately 18,543 tons of timber. The silvicultural objectives in the units are to maintain the current cover types through the use of a commercial thinning. Small groupings of regeneration in the 15 – 20 ft class free from insect and disease infestations would be retained. All other non-commercial understory trees would be reduced as a part of fuel reduction in the contract, or post harvest thinnings. Access to the units would be gained by the construction of 3.47 miles of new road, the upgrade of 3.19 miles open and closed roads, and the upgrade and use of 1.55 miles of cost share road (see West Lynch Timber Sale Proposed Units and Transportation Plan map). Insect and disease infested trees would be removed. Fuel loadings would be reduced to 5 - 10 tons per acre. Section boundary lines within units would have canopy openings of 100 feet along the line. Snags greater than 14 inches DBH would be retained. Screening along open roads adjacent to harvest units would be retained when possible. Upon completion of logging all roads would be seeded and spot treated with chemicals for noxious weeds. Temporary access roads would be closed with earthen berms. Administratively closed roads would be gated (see Post Harvest Road Plan map).

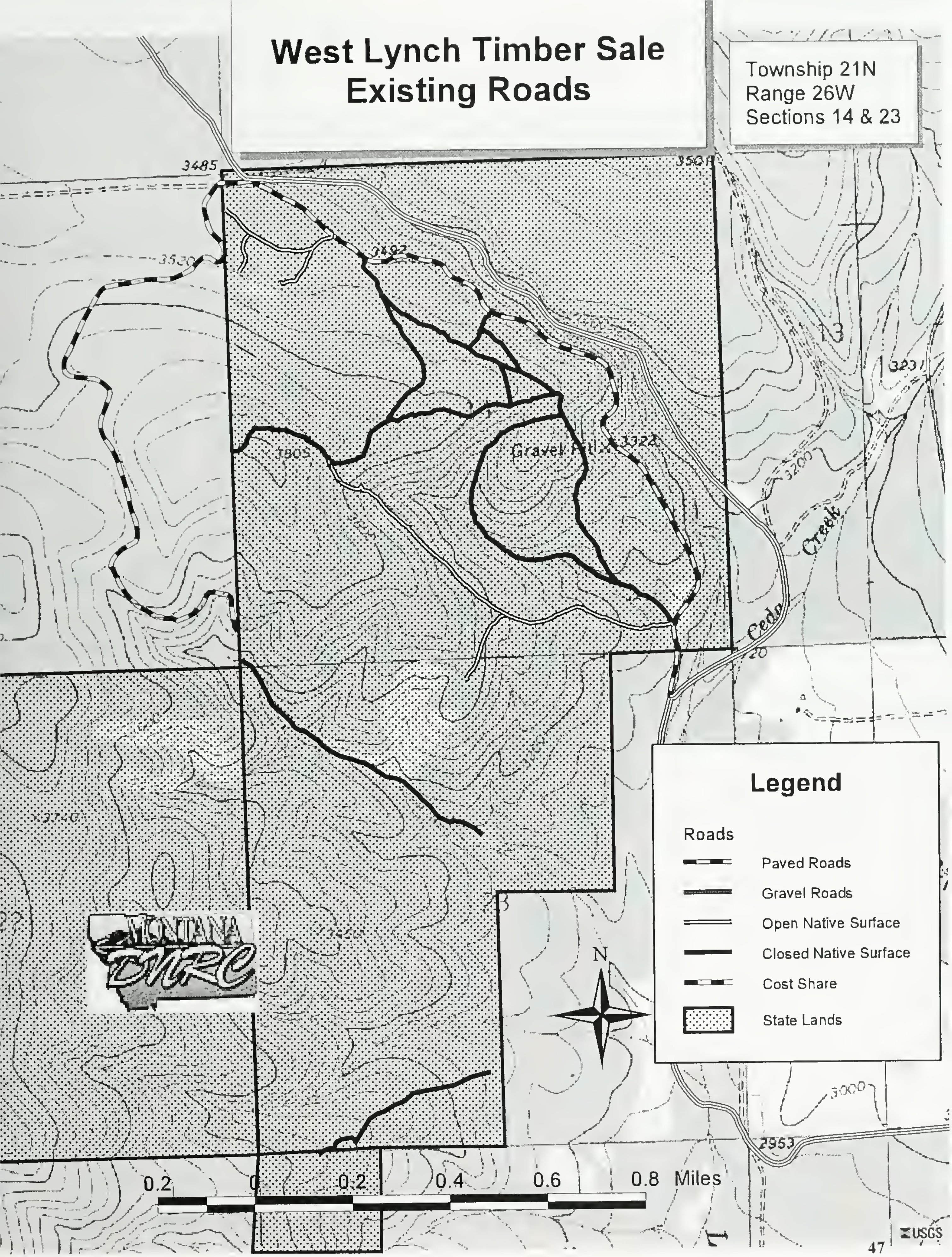
Table 1
Harvest Plan

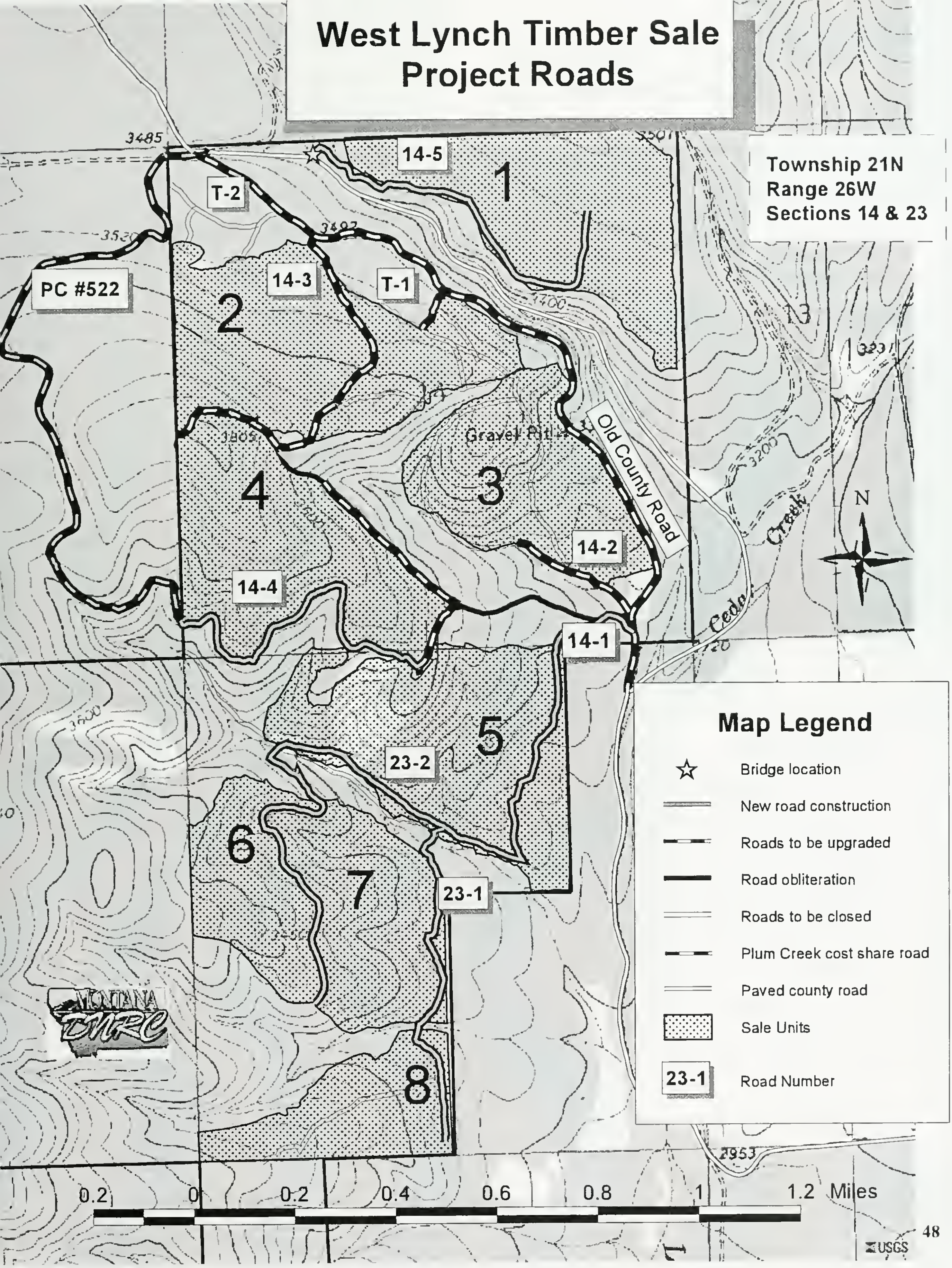
Unit Number	Acres	Volume	Tons	Treatment	Harvest Method
1	98	367 mbf	2385 Tons	Regeneration Seed Tree Cut	Tractor
2	111	555 mbf	3608 Tons	Commercial Thinning	Tractor
3	79	395 mbf	2567 Tons	Commercial Thinning	Tractor
4	100	500 mbf	3249 Tons	Commercial Thinning	Tractor
5	119	598 mbf	3887 Tons	Commercial Thinning	Tractor
6	49	210 mbf	1365 Tons	Commercial Thinning	Tractor
7	70	350 mbf	2275 Tons	Commercial Thinning	Tractor
8	49	245 mbf	1592 Tons	Commercial Thinning	Tractor
R/W	12	70 mbf	468 Tons	Right – of – Way timber	Tractor
Total	687	3.29 MMBF	21,396 Tons		

Table 2
Road Plan

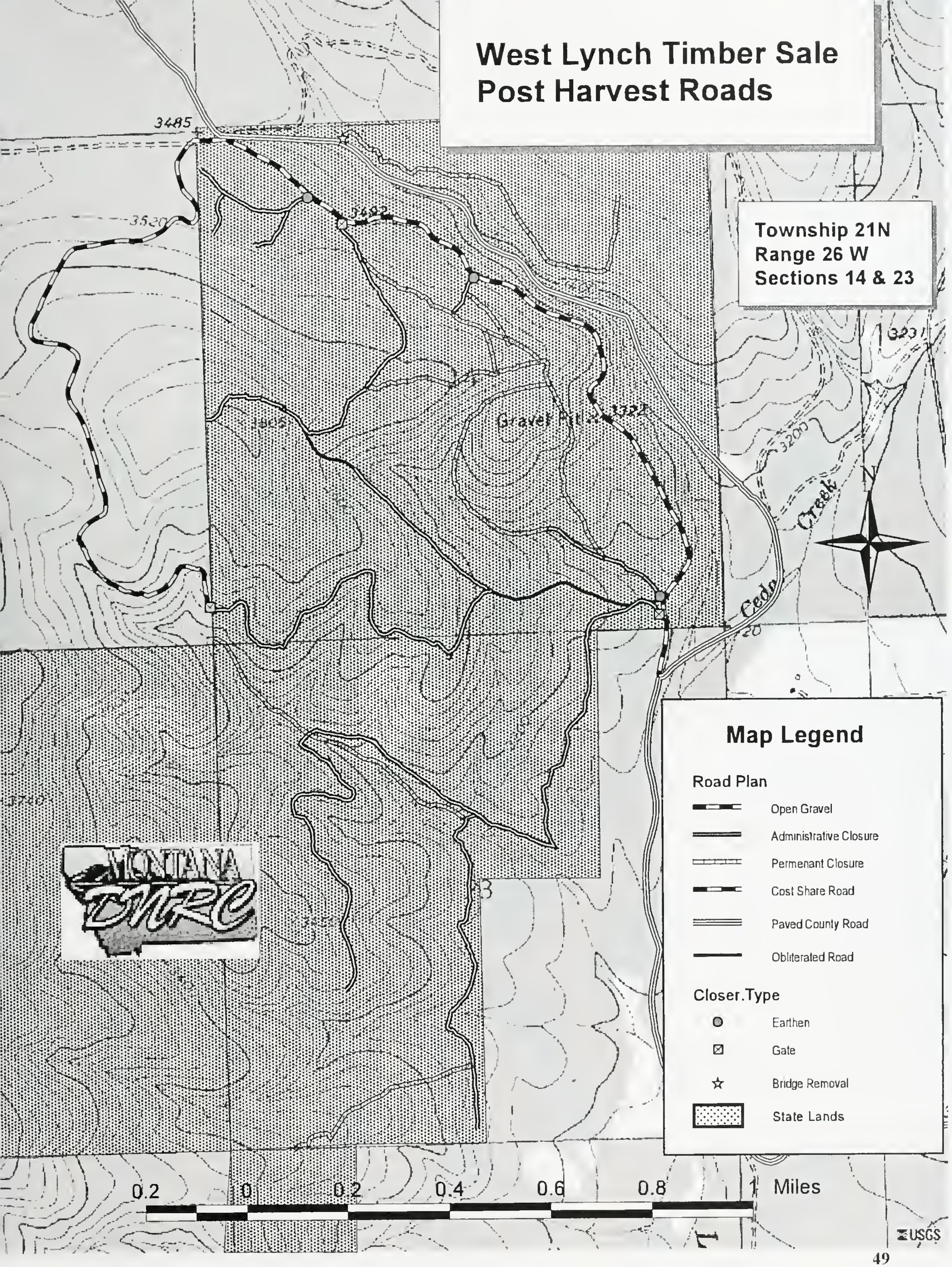
Road Type	Miles of Existing Roads	Miles of Project Roads	Miles of Post Treatment Roads
Open Paved Roads	1.26 mi	1.26 mi	1.26 mi
Open Gravel Roads	1.63 mi	1.63 mi	1.63 mi
Open Native Surface Roads	1.50 mi	2.19 mi	
Closed Native Surface Roads	4.54 mi	3.34 mi	9.81 mi
New Road Construction		4.28 mi	
Obliterated Roads		(0.51 mi)	
TOTAL	8.93 mi	12.70 mi	12.70 mi
Upgraded Open Roads		2.27 mi	
Upgraded Closed Roads		0.92 mi	
Upgraded Cost Share		1.55 mi	
TOTAL		4.74 mi	
Administratively Closed Roads			5.66 mi
Permanently Closed Roads			4.15 mi
TOTAL			9.81 mi

West Lynch Timber Sale
Existing Roads




West Lynch Timber Sale Project Roads

West Lynch Timber Sale Post Harvest Roads



Attachment 5: Mitigation

Mitigation Measures

Roads: A transportation system minimizing road miles and meeting all BMP's has been designed by the DNRC. Roads constructed in conjunction with this project will total approximately 4.28 miles, and will remain in place following project activity. After activities have been completed the roads will be grass seeded and closed to use. A temporary bridge will cross Lynch Creek in section 14 at the beginning of road 14-5. This bridge will be removed at the end of the sale. A State 124 permit would be obtained from Fish Wildlife and Parks prior to road construction. Existing roads to be incorporated into the transportation system would be upgraded to meet all BMP's. During the project 9.36 miles of road would be open. Roads currently in place that do no meet BMP standards will be either closed, upgraded, or obliterated during the construction phase of the project. The action plan would permanently close 4.15 miles, administratively close 5.66 miles of road, and obliterate a little over 0.5 miles of road.

Wildlife: Stand treatments, are designed to reduce impacts to big game and other species, which use the characteristics of a WL/DF cover types. Silvicultural treatments will open the stands and allow rejuvenation of browse species. Snags will be left in all harvest units for snag-associated species. Small groups of healthy under-story species will be left for screening. No activities are planned in movement corridors along SMZ's. Barriers and gates on roads that enter the project area are expected to reduce unauthorized use and wildlife disturbance.

Soil: Soils exposed by construction activities will be grass seeded as soon as it is practically possible. Skid trails will use existing roads when possible to reduce compaction. Trails on grade will be water barred and slash piled in them to limit erosion following project activities. Filter windrows will be used to assist in stabilizing fill slopes of roads. All roads design will include drainage measures to limit erosion.

Hydrology/ Watershed/ Water Quality: No harvest activities are planned in Streamside Management Zones. Existing roads within SMZ's will be reclaimed. Proper drainage features will be included in all new and reconstructed road requirements. A State 124 permit will be obtained for the temporary bridge crossing on road 14-5.

Noxious Weeds: Roads would be seeded and spot treated with chemicals following construction and project completion. Logging equipment will be cleaned and inspected through the timber sale contract to avoid seed migration. Roads will be closed following the sale to avoid migration of weed seed into the area.

Visual Impacts/ Aesthetic Values: Activities will be visible in cutting Units 2 and 3 from the old county road. An impact in crown density will be viewable from the Upper Lynch Creek, and Cedar Creek roads. Lands adjacent to state land will have visible fuel clearings. Visual screening would be retained along open roads to reduce impacts when possible.

Fuel Hazards: Harvest treatments would reduce ladder fuels and trees susceptible to fire. Fuel breaks along section lines would reduce hazards to adjacent properties. Slash would be treated either through logging system design or excavator piling to reduce the available fuel following harvest to 5-10 tons per acre.

Attachment 6: Consultants and References

Proposed West Lynch Timber Sale

Consultants and References

Individuals Consulted

Ballantyne, Larry; MT DNRC, Kalispell/ Plains Unit, Plains, Montana

Baty, Ross; Hydrologist, MT DNRC, Missoula, Montana

Frank, Gary; Wildlife Biologist, MT DNRC, Missoula, Montana

Haddock, Gary; MT DNRC, Northwestern Lands Office, Kalispell, Montana

Hayes, Jon; MT DNRC, Southwestern Lands Office, Missoula, Montana

Issacs, Jack; MT DNRC, Kalispell/ Plains Unit, Plains, Montana

Katzman, Laura; Research Specialist, Montana Fish, Wildlife and Parks, Thompson Falls, Montana

McLeod, Scott; Forest Improvement Supervisor, MT DNRC, Missoula, Montana

Merz, Norman; Wildlife Biologist, MT DNRC, Northwestern Lands Office, Kalispell, Montana

Miller, Marvin; Forester Consultant, Plains, Montana

Nelson, Tony; Hydrologist, MT DNRC, Northwestern Lands Office, Kalispell, Montana

O'Herron, Mike; Planner, MT DNRC, Missoula, Montana

Wolf, Allen; Trust Lands Professional, MT DNRC, Northwestern Lands Office, Kalispell, Montana

Wright, Bill; MT DNRC, Kalispell/ Plains Unit, Unit Manager, Plains, Montana

Young, Everitt; MT DNRC, Kalispell/ Plains Unit, Plains, Montana

Special References

Forestry Best Management Practices, Montana Department of Natural Resources and Conservation.

Green, P., J. Joy, D. Sirucek, W. Hann, A. Zack, and B. Naumann. 1992. Old-growth forest types of the Northern Region. USDA Forest Service, Northern Region. Missoula, Montana.

Losensky, B. John. 1997. Historical Vegetation of Montana.

State Forest Land Management Plan, Montana Department of Natural Resources and Conservation, 1996.